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**MOTOR-VEHICLE TRAFFIC CONDITIONS IN
THE UNITED STATES**

LETTER

FROM

THE SECRETARY OF AGRICULTURE

TRANSMITTING

PURSUANT TO LAW, A SECTION OF A REPORT ON A
STUDY AND RESEARCH OF MOTOR-VEHICLE TRAFFIC
CONDITIONS IN THE UNITED STATES ENTITLED "NON-
UNIFORMITY OF STATE MOTOR-VEHICLE TRAFFIC
LAWS," TOGETHER WITH RECOMMENDATIONS OF MEAS-
URES FOR THEIR IMPROVEMENT

IN SIX PARTS

PART 1

**NONUNIFORMITY OF STATE MOTOR-VEHICLE
TRAFFIC LAWS**

JANUARY 3, 1938.—Referred to the Committee on Roads
and ordered to be printed, with illustrations

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LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE,
Washington, December 23, 1937.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES:

DEAR MR. SPEAKER: There is transmitted herewith a report entitled "Nonuniformity of State Motor-Vehicle Traffic Laws." This is the first of a series of reports based upon investigations conducted by this Department under authority of the act of June 23, 1936 (Public, No. 768, 74th Cong.), which authorized \$75,000 for a study of traffic conditions and measures for their improvement.

Other reports in the series deal with the following subjects: Skilled Investigation at the Scene of the Accident Needed to Develop Causes, Inadequacy of State Motor-Vehicle Accident Reporting, Official Inspection of Vehicles, Case Histories of Fatal Highway Accidents, and The Accident-Prone Driver.

Very truly yours,

H. A. WALLACE, *Secretary.*

LETTER OF SUBMITTAL

DEPARTMENT OF AGRICULTURE,
BUREAU OF PUBLIC ROADS,
Washington, December 22, 1937.

THE SECRETARY OF AGRICULTURE.

DEAR MR. SECRETARY: In accordance with the requirements of the act of June 23, 1936 (Public, No. 768, 74th Cong.), which authorized \$75,000 for a study of traffic conditions and measures for their improvement, intensive studies have been made by this Bureau in co-operation with agencies of recognized standing in the field of traffic safety.

The results of these investigations have been included in a series of six reports. The first of the series entitled "Non-Uniformity of State Motor-Vehicle Traffic Laws," is submitted herewith. Other reports in the series deal with the following subjects: Skilled Investigation at the Scene of the Accident Needed to Develop Causes, Inadequacy of State Motor-Vehicle Accident Reporting, Official Inspection of Vehicles, Case Histories of Fatal Highway Accidents, and The Accident-Prone Driver.

Very truly yours,

THOMAS H. MACDONALD, *Chief of Bureau.*

Enclosure.

ACKNOWLEDGMENTS

The work reported herein was carried on under the direction of the Bureau of Public Roads, Thomas H. MacDonald, Chief. The Bureau obtained the cooperation of a number of organizations and institutions that had previously worked with outstanding effect in the particular field investigated. Special arrangements were made with the highway research board of the National Research Council to permit the interested organizations already engaged in cooperative research with the board to be drawn upon for active participation in the investigation.

In order to benefit from the best thought of those who have given long and careful study to problems of highway safety, an advisory committee was invited to assist in the planning of the research and in the preparation of the reports. The committee, composed of nationally recognized authorities in the field of traffic safety and representatives of organizations long active in the work, included the following members:

Dr. H. C. Dickinson, National Bureau of Standards, chairman of the Highway Research Board.

Prof. C. J. Tilden, Yale University.

Dr. Alvhh R. Lauer, Iowa State College.

Dr. Harry R. DeSilva, Harvard Bureau for Street Traffic Research.

Prof. Robbins B. Stoeckel, Yale University.

Sidney J. Williams, National Safety Council.

Burton W. Marsh, American Automobile Association.

L. W. McIntyre, American Motorists' Association.

Dr. Ralph Lee, Automobile Manufacturers' Association.

Col. A. B. Barber, Chamber of Commerce of the United States.

W. J. Davidson, Society of Automotive Engineers.

A. W. Whitney, National Conservation Bureau.

Arthur W. Brandt, American Association of State Highway Officials.

John Q. Rhodes, Jr., American Association of Motor Vehicle Administrators.

The studies were conducted with the assistance of organizations represented on the advisory committee and that of numerous other organizations.

This report has been prepared by Robert E. Craig, Pierce J. Flanigan, Jr., Frank E. Goehring, Richard C. Lindberg, Robert D. Lyons, Lewin D. McPherson, and Juan Rivera Ruiz, of the Division of Highway Laws and Contracts of the Bureau of Public Roads, under the direction of Lester E. Boykin, Chief of Division.

ON NONUNIFORMITY OF STATE MOTOR-VEHICLE TRAFFIC LAWS

SUMMARY OF DATA, CONCLUSIONS, AND RECOMMENDATIONS

SOURCE AND DEVELOPMENT OF DATA

Control of the registration and operation of motor vehicles in the several States is by statute and rules and regulations issued pursuant thereto. The statutes in many of the States are so prolix that it was concluded that a compilation, or even a reasonably comprehensive digest of them, would be so voluminous as to be undesirable and of doubtful value. It appeared that a more clear, concise, and useful presentation of the extent to which there is uniformity, or lack of uniformity, in the laws of the several States could be obtained by carefully analyzing the existing laws under various topics and grouping the States according to their respective provisions under each topic.

In the study that has been made for the purposes of this report an examination was made of the statutes of all of the States and of the District of Columbia pertaining to motor vehicles and their operation and a comparative analysis has been prepared of all those provisions which it appeared might have a bearing on the control of traffic, or on the safety of traffic, upon the highways. For convenience of expression the District of Columbia is included in this analysis under the term "State," so that reference is made to 49 instead of 48 States.

The legislatures of 43 States were in regular session during this year and many new statutes and revisions of the existing laws relating to this subject were enacted, but very little of this new legislation could be obtained for consideration in connection with this report.

It should be pointed out that many provisions of the statutes were found to be so vague and indefinite that they might be open to more than one interpretation. In addition, there may have been decisions or rulings by State administrative agencies and by the courts of the States which would give a different meaning or interpretation to some of the statutes from that given by the Bureau. It has not been possible to review such decisions or rulings of State administrative agencies or courts, as there was no known source from which they could be obtained in reasonably complete form.

Neither has it been possible to assemble the rules and regulations which have been issued by the States to supplement their statutory provisions. Such rules and regulations are not easily obtainable in complete form so that one can be certain that he has them complete as in force at any particular time. It is possible therefore that a certain amount of error or inconsistency may exist in the results of the study that has been made, but it is believed that such error or incon-

sistency as may exist is relatively insignificant and so slight as to affect neither the general results and conclusions nor the fact that the study which has been made correctly reflects the extent to which there is uniformity in the laws in force in the several States pertaining to motor vehicles and their operation upon the public highways.

The comparative analysis which has been prepared is included in the main body of this report. There will be presented here only a brief summary of what it shows with respect to those topics believed to be of major importance from the standpoint of traffic safety, together with certain conclusions and recommendations.

The control of motor-vehicle operation so as to obtain reasonable safety depends on certain fundamental requirements. Some of the more important of these requirements are the proper registration of each vehicle before it may be operated upon the highway, the licensing of drivers, safety patrol or State highway police, periodic inspection of motor vehicles, certificate of title and other antitheft provisions, restrictions on speed and driving recklessly or while intoxicated or under the influence of liquor or narcotics, rules of the road, traffic-control signs or signals, operator's signals, elimination of glaring headlights, the size, load, and speed of commercial vehicles, financial responsibility of drivers, and the reporting of accidents by persons involved therein.

THE REGISTRATION OF MOTOR VEHICLES

The operation of a vehicle on the highways without valid registration and display of license plates is prohibited in all States. Administration of laws respecting the registration of motor vehicles is vested in seven different classes of organizations within the States, being placed under agencies that have to do with revenue and taxation in 15 States, the secretary of state in 14 States, the motor-vehicle department in 9 States, the highway department in 8 States, the department of law enforcement in 1 State, the warden of the State penitentiary in 1, and the department of licenses in 1. The procedure for registering motor vehicles, however, is substantially uniform in all States.

Application for registration of a motor vehicle or for a certificate of title must be refused by the administrative agency in 34 States if information given by the applicant is false or fraudulent, in 38 States for failure of applicant to supply the information required, in 32 States if the vehicle is mechanically unfit, and in 41 States if the applicant is not otherwise entitled thereto.

It is made a misdemeanor in all but four States knowingly to make false statements or to conceal material facts in applications for registration or certificate of title. Such offense is made a felony in 5 States when made under oath to obtain the registration of a vehicle and in 7 States when so made to obtain a certificate of title, but only 21 States require that the application be signed by the applicant under oath.

A registration certificate or card is required to be issued in all States. It must be signed by the holder in all but six States and must be displayed in the vehicle, or be in the possession of the person in control of the vehicle, at all times.

A registration plate for both front and rear of vehicle is issued in all but three States, the latter States requiring only one plate which is to be attached to the rear of the vehicle.

The administrative agency is given general discretionary power to suspend or revoke the registration of a vehicle in 10 States. Such agency is also empowered to make such suspension or revocation in 7 States if the registration was erroneously granted, in 16 States if the vehicle has become mechanically unsafe, in 10 States if the vehicle has been dismantled and wrecked, in 9 States if the required fees and taxes have not been paid, in 12 States if the registration certificate or plates have been intentionally displayed on the wrong vehicle, and in 19 States if unlawful use has been made of the registration certificate or plates. It is specifically required in 29 States that the registration certificate and plates shall be surrendered to the administrative agency on revocation or suspension.

CERTIFICATE OF TITLE AND ANTITHEFT PROVISIONS

A certificate of title is required before a vehicle may be registered in 25 States; and a certificate of ownership or a bill of sale must be shown in 7 States. The vendor or vendee, or both, of a registered vehicle are required in 33 States to notify the State administrative agency of its transfer. Dealers are required in 10 States to notify the State administrative agency upon acquiring a registered vehicle, and 21 States require dealers to keep a record of all such vehicles coming into their possession and to make such record open to inspection by police officers or by employees of the State administrative agency. Peace officers who learn of the theft of a motor vehicle are required in 23 States to report same to the State administrative agency. Such report should be made by the owner of a stolen vehicle in 17 States. Like reports are required of the recovery of a vehicle. The registration of a stolen vehicle is suspended for the remainder of the registration year in 12 States, until the vehicle is recovered in 10 States, for 3 years in 2 States, and for 5 years in 1 State.

State administrative agencies are required in 28 States to keep indexed files of reports of vehicle thefts and of registration suspensions on account thereof. Lists of stolen vehicles reported must be compiled periodically in 32 States and must be distributed to peace officers therein in 22 States, and in 19 States to the proper administrative agencies of other States.

LICENSING OF MOTOR-VEHICLE OPERATORS

A permit is required in 41 States before a person may operate a motor vehicle upon the public highways. There are certain exemptions to this requirement which vary among the States and include persons operating vehicles in the service of the United States, members of the National Guard, foreign diplomats, operators of road machinery or implements of husbandry temporarily moving upon the highways, and nonresidents properly authorized to drive by their home States. Minimum age limits are prescribed for unrestricted operators' licenses. These range from 14 years in 4 States to 18 years in 4 other States, the largest group of 25 States fixing such limit at 16 years. Of the 8 States that do not require the licensing of drivers, 2 provide that it shall be unlawful for persons under 14 years of age to operate a motor vehicle; 3 fix the minimum age at 15 years, and 1 at 16; while 2 have no provision on this subject. Varying minimum age limits of from 15 to 21 years are prescribed for drivers

of school busses, chauffeurs, common carriers of property, and public-passenger busses.

The administrative agency is given discretion in 37 States to refuse a license to any person who by reason of physical or mental disability, or other cause, is not able to operate a motor vehicle with safety upon the highways. In addition, varying specific grounds are prescribed for which issuance of a license is prohibited. Every new applicant for an operator's permit in 30 States is required to pass such tests as are prescribed by law or regulation and to give an actual demonstration of his ability to exercise ordinary and reasonable care in the operation of a motor vehicle. Five other States do not require an examination or test but authorize the official issuing the license to examine applicants whom he suspects of being unfit to drive. No examination or test is required in 6 of the States that provide for operators' licenses. The scope of examination varies in the States. For the purpose of conducting examinations or tests, the administrative agency in 14 States is authorized to designate sheriffs, chiefs of police, other local officials, or private citizens whom it deems qualified to conduct tests for this purpose. Such examinations are conducted in 18 States by full-time agents of the State administrative agency or by the State police. In 3 of the States in which examinations are discretionary, they are conducted, when required, by the county treasurer in 1, by agents of the State administrative agency in 1, and by sheriffs or chiefs of police in 1.

The administrative agency is authorized and directed in 28 States to suspend or revoke the license of any resident driver upon receipt of notice of his conviction of an offense against the motor-vehicle laws of another State for which conviction in the home State would be sufficient ground for such suspension or revocation. Such agency in 29 States is also specifically authorized to suspend or revoke the driving permit of a nonresident for the same causes and in like manner as such permit of a resident may be suspended or revoked. It also is authorized in 25 States to forward a copy of the record of conviction of a nonresident to the administrative agency of the State of residence of the person so convicted. The courts of 37 States are required to forward to the administrative agency the record of every conviction of any offense which requires the revocation or suspension of a driver's license.

Mandatory revocation or suspension of a driver's license is required for various prescribed reasons, among which are conviction of manslaughter (30 States), or of any felony (25 States), a motor vehicle being used in the commission of such offenses; conviction of driving while under the influence of intoxicating liquor or narcotic drugs (36 States), conviction of failure to stop and render aid and disclose identity in event of accident resulting in personal injury or death (31 States); upon 3 convictions of reckless driving in a period of 12 months (17 States); upon 2 convictions within a like period (2 States); upon 3 convictions within 2 years (1 State); upon the first conviction (5 States); and upon conviction of various miscellaneous offenses.

Varying grounds are also assigned upon which discretionary power to revoke or suspend drivers' licenses is vested in the administrative agency. The period of revocation varies, being for at least 1 year in 22 States, at least 6 months in 2 States, at least 3 months in 2 States, and, for certain specific serious offenses, for the remainder of the

operator's life in 5 States, for not less than 5 years in 3 States, and not less than 3 years in 2 States.

Any operator whose license has been suspended or revoked, in 25 States, is forbidden during the period of such suspension or revocation to operate a motor vehicle therein under a permit or registration certificate issued by any other State.

Penalties for driving while license is suspended or revoked vary from a minimum fine of \$10 in 3 States to a maximum of \$1,000 in 4 States, and from imprisonment for a minimum period of 2 days in 9 States to a maximum of 3 years in 1 State, jail sentence being compulsory in 15 States.

HOURS OF SERVICE OF DRIVERS OF COMMERCIAL VEHICLES

A number of States have prescribed certain limits on the hours of service of drivers of certain classes of commercial vehicles. These limitations are fixed by statute or by regulation. The maximum period that any person may drive such vehicle without rest varies from 7 to 14 hours in 34 States. When driving is not continuous the maximum number of hours that a driver may be on duty within certain specific periods, none of which exceed 24 hours, varies from 8 to 16 hours in 41 States. The minimum periods of rest that drivers must have before starting a new period of duty vary from 6 to 12 hours in 34 States.

LAWS PERTAINING TO CIVIL LIABILITY

The laws relating to civil liability of motor-vehicle owners and operators, aside from the extent to which they more clearly define the liability of such parties, are of interest from the traffic standpoint primarily for the reason that 41 States provide for service of process on nonresidents by substituted service on certain designated State officials, thus making it less easy for a nonresident to escape responsibility for an accident that he may have caused by evading service in the jurisdiction in which the accident occurred. This should have some effect on nonresidents who might otherwise be disposed to be careless or indifferent under the belief that they could escape service and responsibility by passing out of the jurisdiction. More care on the part of resident owners and operators also should follow the fixing of more definite liability on them by statute. Laws of 27 States tend to curb the filing of claims by gratuitous guests by providing that liability of the owner or operator to such guests shall be limited to cases of gross negligence, wanton or reckless disregard of the rights of others, willful misconduct, or driving while intoxicated. The civil liability laws likewise define the liability of the owners of "for rent" vehicles and of those who may rent such vehicles.

There is a fair degree of uniformity in the statutes of the States that provide for service of process on nonresidents by substituted service on the commissioner of motor vehicles, or other designated State officer and that limit the liability of the owner or operator of a motor vehicle to nonpaying guests. In other respects so few States have legislation concerning civil liability and such legislation as exists varies so much that no reasonable degree of uniformity may be said to exist.

PROOF OF FINANCIAL RESPONSIBILITY

Laws imposing requirements as to the financial responsibility of the operators of motor vehicles are in force in 30 States. Nineteen of these States require proof of financial responsibility, in varying amounts, from persons convicted of violations of specified provisions of the motor-vehicle laws and from persons who fail to satisfy judgments rendered against them in cases arising from operation of motor vehicles. The designated offenses for which conviction makes the offender subject to the financial-responsibility laws vary considerably. Pending the furnishing of proof of financial responsibility, under the conditions named, 15 States summarily suspend the license of the operator and the registration of the vehicle involved, 10 States allow 10 days for furnishing such proof before making suspensions, 4 States suspend only the operator's license, and 1 State suspends only the registration of the vehicle involved. Other provisions upon this subject vary so greatly that no logical grouping of them is feasible.

REQUIREMENTS IN CASE OF ACCIDENT

Every State requires the driver of a motor vehicle involved in an accident resulting in death or injury to any person to return to the scene of the accident, and in 37 States he is required to render reasonable assistance to anyone injured and, if necessary, to aid in getting such person to a physician or hospital. Forty-three States require the vehicle operator to return to the scene of accident if only property damage of various specified classes is involved, while 6 States have no provision for stopping after an accident when the resulting damage is confined to property. Upon returning to the scene of an accident, the duties of the operators involved are to a certain extent uniform in the various States.

The penalties for conviction of failure to stop after being involved in an accident are often severe, varying from fines of \$10 to \$5,000 and imprisonment for 30 days to 5 years, or both. In 31 States an operator's license also may be forfeited for this offense.

Every accident which results in personal injury or death must be reported immediately in 11 States, within 24 hours in 18 States, and within 48 hours in 3 States, while no report at all is required in 16 States. In the remaining State such report is required only if the accident occurred within a city or town. Accidents which involve only property damage must be reported, if the apparent damage is over \$100 in 1 State, \$50 in 13 States, \$25 in 4 States, and \$10 in 2 States. In seven States an accident that causes any damage at all must be reported. In 1 State a report is required only if a car is disabled, while in 21 States no report is required if only property damage is involved.

The reports of accidents must be made to the motor-vehicle department or corresponding agency in 16 States, while in the other States that require such reports they must be made to the police or sheriff of the jurisdiction in which the accident occurred. Supplemental reports may be required by the State administrative agency in 23 States. Such agency is authorized to prepare accident report forms and distribute them to local authorities on request in 23 States, but all accident reports are required to be on approved forms in only 15

States. Coroners in 13 States are required to report to the State administrative agency all deaths resulting from motor-vehicle accidents, while in 2 other States this duty is imposed on local police authorities. Garages in 16 States must report vehicles brought in for repair that bear bullet holes or signs of serious collision.

The reports required in accident cases in 22 States are expressly declared to be confidential and not for public inspection or use. In 15 States the administrative agency is authorized to tabulate, analyze, and publish statistical information compiled from the reports received.

From the foregoing it will be noted that no reports of accidents are required in one-third of all of the States and that there is a total absence of uniformity in the requirements of the other States.

TRAFFIC-CONTROL DEVICES

The administrative agency is authorized in 27 States to prescribe the size, shape, and meaning of various traffic-control devices, and in these States and 9 others may place them wherever it shall consider them necessary for the regulation of traffic. The laws of two States require that such devices shall conform as nearly as possible to those adopted in other States. Twenty-two States have enacted laws that prescribe to some extent legends for controlling the meaning of traffic-light signals, but many variations exist as between States. The resulting confusion is greatly augmented by the fact that all but 10 States specifically provide that local authorities may erect control devices within their respective jurisdictions.

DRUNKEN DRIVING

The operation of a motor vehicle by one in an intoxicated condition, or while under the influence of liquor, is made a criminal offense in every State. In general, the same provisions, including penalties, apply to driving while under the influence of narcotic drugs. In the matter of penalties for first offense, five States require imprisonment, two States provide fines but no imprisonment, and all other States provide fine or imprisonment, or both. The penalties prescribed vary quite widely and are increased in severity for convictions of second and third offenses in many States, imprisonment being made mandatory in 23 States for conviction of a second offense and in four other States for conviction of a third offense. Additional penalties provided are mandatory suspension or revocation of the right to operate a motor vehicle, either by the State administrative agency or by order of court, in 40 States for first conviction, and impounding the vehicle operated by the drunken driver in seven States if it is registered in his name. If death or serious bodily injury results, the offense is an aggravated one in 11 States and subject to much heavier penalties, ranging from 30 days' to 20 years' imprisonment as well as heavy fines.

SPEED RESTRICTIONS

The laws pertaining to speed of motor vehicles generally impose different requirements for privately operated passenger vehicles and for commercial vehicles. With respect to the speed at which pri-

vately operated passenger vehicles may be operated, seven States have fixed maximum limits, 26 States have *prima facie* limits, and 16 States have no limit in miles per hour, while in addition substantially all of the States have adopted the common-law rule that no person shall drive a vehicle at a greater speed than is reasonable and prudent under the conditions then existing. Legislation exists in 22 States concerning driving at unreasonably slow speed.

As to the speed of commercial vehicles, the limits prescribed vary widely with the type, size, and weight of load. These speeds where fixed range from 10 to 45 miles per hour, and some States provide for a graduated decrease in speed with increase in load. However, about one-third of the States make no separate provision for the speed of such vehicles, thus apparently leaving them subject to the same limits as private passenger vehicles.

The Interstate Commerce Commission, under authority of the Motor Carrier Act of 1935, issued certain regulations under date of December 23, 1936, in which the rule adopted is that the speed of common and contract carriers operating in interstate commerce shall be reasonable and prudent under the conditions that exist and shall not exceed that permitted by the jurisdiction in which the carrier is operating. In connection with the promulgation of this rule, the Commission stated that it was of opinion that no satisfactory solution has yet been found for the problem of controlling the speed of motor vehicles upon the open highway and that it had felt impelled to refrain, for the present, from specifying a speed limit in miles per hour.

Reckless driving is prohibited in 41 States. The penalties for violation of the speed limits generally are less severe than for reckless driving, thus indicating that reckless driving is regarded almost everywhere as the more serious offense. Penalties for exceeding speed limits vary extensively in the different States, from fines of \$1 to \$1,000 or imprisonment not to exceed 2 years, or both, for the first offense. These penalties are increased in severity in many States for any subsequent offense.

In addition to the lack of uniformity in the laws of the several States regarding the speed of motor vehicles, the situation is further complicated and confused by the fact that the local authorities in 35 States are given varying powers to revise speed limits fixed by the State.

RULES OF THE ROAD

Concerning what are commonly referred to as the "rules of the road," it may be said that existing uniformity is confined primarily to those fundamental requirements that prevailed before the advent of the motor vehicle, namely, that all vehicles shall be driven on the right side of the highway and shall keep to the right at all times except when passing other vehicles moving in the same direction, and that when two vehicles approach an intersection from different highways at the same time the vehicle on the left must yield the right-of-way to the one on the right. There is a notable lack of uniformity respecting other such rules, the diversity of requirements in some particulars being so marked that compliance therewith makes confusion appear inescapable. For instance, in the matter of signaling with the hand and arm, the left arm extended horizontally be-

yond the side of the vehicle may indicate an intention to stop or suddenly decrease speed in 17 States, a left turn in 27 States, and a right turn in 14 States. In 12 of these States this signal is used to indicate any one of these movements. An intended left turn is indicated by the left arm so extended and pointing to the left in 6 other States, and by holding the left arm upward in one and downward in another; and a contemplated right turn is indicated by holding the left arm upward in 16 other States, by a circular motion of the left hand in 3, and by a sweeping motion of the left arm from rear to front in 2 other States.

REQUIREMENTS AS TO LIGHTS

Motor vehicles are required by all States to be equipped with at least two head lamps and a rear light. The color of headlights is regulated by prescribing permissible colors in 19 States and by prohibiting specified colors in 17 States. Many States require that headlights be visible for specified distances ahead, and that they must illuminate objects certain distances away. Glaring headlights are prohibited by statute in 37 States, and in 2 other States headlights must be dimmed on approaching other vehicles. Every State requires the rear light to be red.

Certain types of commercial vehicles in 33 States are required to display clearance lights to outline their position on the highway. No uniformity as to the color of such lights or their position on vehicles exists. Regulations recently issued by the Interstate Commerce Commission specify the kind of clearance lights that shall be displayed on all interstate common and contract carriers. The adoption of like requirements by the States would give uniformity in this matter.

COMMERCIAL-VEHICLE SIZES AND WEIGHTS

The provisions respecting the maximum permissible length, width, height, and weight of various types of commercial vehicles differ in practically every State. Except for width limitations, there is very little uniformity in the statutes of the States pertaining to this subject. For instance, the permissible weights are determined in various States on the basis of tire width, wheel load, axle load, net load, or gross weight, either for a single vehicle or for specified combinations of vehicles. The confusion to which this leads is indicated by the fact that the gross weight of any combination of vehicles permitted in the various States ranges from 18,000 to 120,000 pounds. Such a wide spread in permissible gross weights cannot be justified on any rational basis. A further cause for confusion arises from the fact that 19 States specifically authorize local officials to establish limitations on the size and weight of vehicles at variance with those fixed by the State.

STATE HIGHWAY PATROLS

There is provision in all but four States for some form of a State highway patrol organization. Such organization in 14 States is under the direction of a State police department, in 5 States a department of public safety, and in 4 States a separate agency created for that

purpose. It is under the direction of the highway department in 12 States and the motor-vehicle department in 5 States. In five other States it is under the department of revenue. The size of the organization varies quite materially in the different States, the approximate personnel, according to the latest available data, being about as follows:

Number of States:	Size of force	Number of States—	Size of force
1-----	Over 800.	Continued.	
1-----	650 to 700.	7-----	100 to 149.
1-----	500 to 550.	11-----	50 to 99.
2-----	300 to 350.	12-----	11 to 49.
3-----	200 to 299.	3-----	10 or less.
4-----	150 to 199.		

It is obvious from the above that the personnel of the patrol organizations in more than half of the States is wholly inadequate effectively to patrol the highways and enforce the traffic laws, particularly in view of the fact that the States that have the smallest patrols are among the larger States in area. The effectiveness of such organizations in enforcing the traffic laws is further diminished in many States by the fact that they are charged with the enforcement of numerous laws which have no relation to highway safety. Enforcement of the motor-vehicle laws appears to be the major function of the patrol organization in only 22 States. In a few States such organization consists of a small personnel concerned primarily with the collection of revenues derived from motor vehicles and their operation.

REQUIRED INSPECTION OF VEHICLES

Provision is made for periodic inspection of all motor vehicles in 22 States and of particular types of commercial vehicles in one other State. In six of these States this requirement is limited to specified cities or classes of municipalities. The inspections in nine States are made by employees of the State or a municipality and in the remaining States by authorized privately owned garages or service stations.

If all States would require periodic inspection of all vehicles and provide that it be made by public employees rather than by private agencies, many mechanically unsafe vehicles that now operate freely upon the highways to the serious hazard of all traffic thereon would be eliminated.

CONCLUSIONS AND RECOMMENDATIONS

The analysis that has been made of the State motor-vehicle laws clearly demonstrates an amazing lack of uniformity in laws and the methods provided for their enforcement. This chaotic nonuniformity prevails not only in matters that are minor or relatively unimportant but also with respect to many of those provisions that are essentially fundamental in all major problems relating to traffic safety.

The only major subject upon which there may be said to be uniformity in both the statutes and their enforcement is the requirement that every motor vehicle must be registered and licensed before it may be driven upon the highways. Back of this, however, is the

fact that it is a revenue measure, and were it not so, in all probability, there would be many unlicensed vehicles on the highways today. The same degree of uniformity does not exist in the provisions respecting suspension or revocation of the registration of a vehicle for proper cause, nor in the methods provided for enforcing such provisions.

There is serious lack of uniformity on such major matters as the licensing of drivers, the policing of the highways, periodic inspection of vehicles, limitations on speed of private passenger vehicles and on the size, load, and speed of commercial vehicles, rules of the road, traffic-control signs or signals, operator's signals, and in the reporting of accidents.

The number of automobiles of all classes registered in all States in the year 1936 was 28,625,627. Every time that any such vehicle is driven upon the highway it is operated by some individual. If all of these vehicles should be operated upon the highways at the same time, it would mean that approximately one-fourth of the total population of the country would be engaged in the act of operating motor vehicles at that particular moment.

If all drivers and all pedestrians would conduct themselves continuously in a safe and prudent manner on the streets and highways, the problem of accidents would largely disappear. It is generally accepted that the manner of driving a motor vehicle becomes a habit and that the involuntary reflexes largely govern the handling and control of a vehicle by each individual. The involuntary response determines the reaction of the driver in emergencies. The driving habits of the individual, with few exceptions, are formed in a single State and a single community of that State. Not only the normal habits of driving but the involuntary reactions, which perhaps are of even greater importance, are largely the product of the laws and their enforcement by an individual State and even by a local community.

A driver with his driving habits formed in one community, operating his motor vehicle legally, prudently, and naturally, as fixed by the habits acquired under the laws of his home State, is often transformed into a lawbreaker and an unsafe driver by crossing the State line.

How, then, can we make progress toward a nation of safe drivers while there is such chaotic nonuniformity from State to State in both the motor-vehicle laws and in their enforcement?

Interstate traffic constitutes an important percentage of the total within each State. For certain major arteries of heavy flow, the out-of-State traffic may reach, at periods, as high as 75 percent of the total. This actually and relatively large amount of interstate traffic creates a national problem of laws and regulations in the field of privately owned motor vehicles that can be ignored by the Federal Government only if adequate and uniform laws and regulations are adopted by all States. This refers to major principles rather than to unimportant details.

In view of the confused situation that has been shown to exist, the following recommendations are submitted:

1. States that do not now require the licensing of motor-vehicle operators should enact such a law. Such statutes in those States where they already exist and do not require an examination and a driving test should be so revised, and all new legislation on the sub-

ject should be so drawn, as to include a rigid requirement of an adequate examination and test, such examination and test to be given by full-time examiners especially qualified for the purpose.

2. The laws of every State which do not now require compulsory reporting of accidents by motor-vehicle operators involved therein should be amended to impose such requirement in cases which result in death or personal injury, or substantial property damage.

3. States that do not now require periodic inspection of motor vehicles in order to insure their mechanical fitness for safe operation on the highways should give consideration to the advisability of enacting legislation on this subject.

4. Every State that does not now have a highway police patrol should provide for such an organization. The major duty of such patrol should be enforcement of the motor-vehicle laws pertaining to traffic. The personnel for such force should be especially trained for that purpose and should be sufficiently large adequately to patrol the highways.

5. The laws and regulations respecting traffic should be uniform throughout each State, and any local ordinances or regulations adopted should be subject to approval by the State administrative agency before becoming effective. Local enforcement officers should be relied upon primarily in municipalities and as supplementary to the State agency.

6. The laws and regulations pertaining to the movement of vehicles upon the highways, especially the rules of the road, should be made uniform throughout all of the States.

LAWS RELATING TO ADMINISTRATION, REGISTRATION, CERTIFICATE OF TITLE, AND PREVENTION OF THEFT OF MOTOR VEHICLES

ADMINISTRATION OF LAWS RELATING TO REGISTRATION

The administration of the laws relating to the ownership, registration, and prevention of theft of motor vehicles is vested in widely differing organizations in the several States. The responsible administrative agency in 15 States¹ is the department of finance, taxation or revenue; in 14 States,² the secretary of state; in 8 States,³ a separate motor-vehicle department; in 8 States,⁴ the highway department; and in 1 State each, the department of law enforcement,⁵ the warden of the State penitentiary,⁶ the department of licenses,⁷ and the department of vehicles and traffic.⁸ The subdivisions of the responsible agency in direct control of administering such laws, and the chief administrative officer, are shown by States in table 1.

¹ Alabama, Arkansas, Georgia, Indiana, Kentucky, Mississippi, New Mexico, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Utah, and Virginia.

² Colorado, Delaware, Illinois, Iowa, Louisiana, Maine, Michigan, Minnesota, Missouri, Nevada, Oregon, South Dakota, Wisconsin, and Wyoming.

³ California, Connecticut, Florida, Kansas, Maryland, New Hampshire, New Jersey, and Vermont.

⁴ Arizona, Massachusetts, Nebraska, North Dakota, Ohio, South Carolina, Texas, and West Virginia.

⁵ Idaho.

⁶ Montana.

⁷ Washington.

⁸ District of Columbia.

TABLE 1.—Public agencies charged with the administration of laws relating to the registration of motor vehicles

State	Agency with general responsibility for administration	Agency in direct control of administration	Officer directly charged with administration of registration laws	Local officials performing duties in connection with registration
Alabama.....	State tax commission.....	State tax commission.....	Associate member, State tax commission.....	County judges of probate.
Arizona.....	State highway department.....	Division of motor vehicles.....	Vehicle superintendent.....	County assessors.
Arkansas.....	Revenue department.....	Automobile license division.....	Supervisor, automobile license division.....	
California.....	Department of motor vehicles.....	Department of motor vehicles.....	Director of motor vehicles.....	County clerks and recorders.
Colorado.....	Secretary of state.....	Motor vehicle division.....	Motor vehicle supervisor.....	
Connecticut.....	Department of motor vehicles.....	Department of motor vehicles.....	Commissioner of motor vehicles.....	County officers.
Delaware.....	Secretary of state.....	Vehicle department.....	Vehicle commissioner ¹	County assessors.
Florida.....	Office of motor vehicle commissioner.....	Office of motor vehicle commissioner.....	Motor vehicle commissioner.....	
Georgia.....	State revenue commissioner.....	Motor vehicle registration division.....	Chief clerk, motor vehicle division.....	County assessors.
Idaho.....	Department of law enforcement.....	Department of law enforcement.....	Commissioner of law enforcement.....	
Illinois.....	Department of state.....	Automobile department.....	Chief clerk, automobile department.....	County treasurers.
Indiana.....	Department of treasury.....	Bureau of motor vehicles.....	Commissioner of motor vehicles.....	Do.
Iowa.....	Secretary of state.....	Motor vehicle department.....	Vehicle commissioner.....	
Kansas.....	Vehicle department.....	Vehicle department.....	Director of motor vehicle division.....	
Kentucky.....	Department of revenue.....	Motor vehicle division.....	Vehicle commissioner ¹	
Louisiana.....	Secretary of state.....	Motor vehicle bureau.....	Secretary of state.....	
Maine.....	do.....	Office of commissioner of motor vehicles.....	Commissioner of motor vehicles.....	
Maryland.....	Office of commissioner of motor vehicles.....	Office of registrar of motor vehicles.....	Registrar of motor vehicles.....	
Massachusetts.....	Department of public works.....	Secretary of state.....	Secretary of state.....	
Michigan.....	Department of state.....	Office of registrar of motor vehicles.....	Registrar of motor vehicles ¹	
Minnesota.....	do.....	Automobile department.....	Chief clerk, automobile department.....	
Mississippi.....	Auditor of public accounts.....	Office of commissioner of motor vehicles.....	Motor vehicle commissioner.....	
Missouri.....	Secretary of state.....	Registral of motor vehicles.....	Registrar of motor vehicles ²	County treasurers.
Montana.....	Warden of State penitentiary.....	Motor vehicle division.....	Chief clerk, motor vehicle division.....	County assessors.
Nebraska.....	Department of roads and irrigation.....	Motor vehicle department.....	Motor vehicle commissioner ¹	
Nevada.....	Secretary of state.....	do.....	Commissioner of motor vehicles.....	
New Hampshire.....	Motor vehicle department.....	Department of motor vehicles.....	Motor vehicle commissioner.....	
New Jersey.....	State comptroller.....	Bureau of motor vehicles.....	Commissioner of motor vehicles.....	
New Mexico.....	Department of taxation and finance.....	Motor vehicle bureau.....	Motor vehicle commissioner ³	
New York.....	Department of revenue.....	Office of registrar of motor vehicles.....	Registrar of motor vehicles.....	
North Carolina.....	State highway commission.....	Bureau of motor vehicles.....	do.....	County auditors.
North Dakota.....	Department of highways.....	Motor vehicle license division.....	Chief of motor vehicle license division.....	
Ohio.....	State tax commission.....	Secretary of state.....	Secretary of state.....	
Oklahoma.....	Secretary of state.....	Bureau of motor vehicles.....	Director of bureau of motor vehicles.....	
Oregon.....	Department of revenue.....			
Pennsylvania.....				

¹ Secretary of State holds this office ex officio.² Warden of the State penitentiary holds this office ex officio.³ Commissioner of revenue holds this office ex officio.

TABLE 1.—*Public agencies charged with the administration of laws relating to the registration of motor vehicles*—Continued

State	Agency with general responsibility for administration	Agency in direct control of administration	Officer directly charged with administration of registration laws	Local officials performing duties in connection with registration
Rhode Island.....	Department of taxation and regulation.....	Division of motor vehicles.....	Chief of division of motor vehicles.....	
South Carolina.....	State highway department.....	Motor vehicle division.....	Director of motor vehicle division.....	County court clerks.
South Dakota.....	Secretary of state.....	Secretary of state.....	Secretary of state.....	County treasurers.
Tennessee.....	Department of finance and taxation.....	Motor vehicle division.....	Commissioner of finance and taxation.....	County court clerks.
Texas.....	State highway department.....	State highway department.....	State highway commissioners.....	County tax collectors.
Utah.....	State tax commission.....	Motor vehicle department.....	Supervisor, motor vehicle department.....	
Vermont.....	Motor vehicle department.....	do.....	Commissioner of motor vehicles.....	
Virginia.....	Department of finance.....	Division of motor vehicles.....	Director of division of motor vehicles.....	
Washington.....	Department of licenses.....	Department of licenses.....	Director of licenses.....	County auditors.
West Virginia.....	State road commission.....	State road commission.....	State road commissioner.....	
Wisconsin.....	Department of state.....	Department of state.....	Secretary of state.....	County treasurers.
Wyoming.....	Secretary of state.....	Secretary of state.....	do.....	
District of Columbia.....	Department of vehicles and traffic.....	Department of vehicles and traffic.....	Director of department of vehicles and traffic.....	

General authority to enforce the provisions of the registration laws and to establish an organization for that purpose is reposed in the administrative agency in every State. Many States also delegate authority to these agencies to perform certain miscellaneous acts, and require them to carry out particular duties. Among the functions most often specifically authorized are the granting of special permits to operate motor vehicles pending registration or with heavy loads in all States, the publication of lists of registered vehicles (34 States),⁹ publication of summaries of the motor vehicle laws (28 States),¹⁰ and the publication of reports of stolen and recovered automobiles (27 States).¹¹ The registration of vehicles must be indexed by owner's name in 40 States;¹² by registration number in 26 States;¹³ by the manufacturer's identifying number in 28 States;¹⁴ and by counties in 6 States.¹⁵ The administrative agency is authorized to hold hearings in 41 States;¹⁶ and to prescribe rules and regulations for the enforcement of the motor vehicle laws, in 11 States.¹⁷ Other functions delegated to the administrative agency are considered in connection with the particular phases of law to which they relate.

REGISTRATION OF MOTOR VEHICLES

The procedure for registering motor vehicles is substantially uniform in all States. The applicant fills out a blank furnished by the administrative agency, which in all States must show applicant's name and address, date of sale by manufacturer or dealer to applicant, description of vehicle including designation of make, model, type of body, number of cylinders or horsepower, serial number of vehicle, engine number, and whether new or used. In 27 States¹⁸ it must be signed by the applicant, specific statutory requirement

⁹ Arkansas, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming.

¹⁰ California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Minnesota, Montana, New Mexico, North Dakota, Oklahoma, Pennsylvania, South Carolina, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

¹¹ Arizona, Colorado, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Louisiana, Maine, Michigan, Minnesota, Mississippi, Montana, Nevada, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Dakota, Utah, Virginia, Washington, West Virginia, and Wisconsin.

¹² Arizona, Arkansas, California, Colorado, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

¹³ Arkansas, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Minnesota, Montana, New Mexico, North Dakota, Oklahoma, Pennsylvania, South Carolina, South Dakota, Utah, Vermont, Washington, West Virginia, Wisconsin, and the District of Columbia.

¹⁴ Florida, Georgia, Indiana, Iowa, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming.

¹⁵ Georgia, Indiana, Montana, Vermont, Washington, and Wyoming.
¹⁶ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wyoming.

¹⁷ Kansas, Louisiana, Maine, Massachusetts, Nebraska, Nevada, North Carolina, North Dakota, Utah, Virginia, and the District of Columbia.

¹⁸ Alabama, Delaware, Georgia, Idaho, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Texas, Vermont, Virginia, Wyoming, and the District of Columbia.

that it be so signed not being found in the other States. Twenty-one States¹⁹ require that it must be sworn to. It also must show any "special construction" or "reconstruction" in 18 States.²⁰ Applicant's title must also be shown in all States that require evidence thereof prior to registration, together with a showing as to liens or interest of others (18 States).²¹

FRAUD IN APPLICATIONS

Knowingly, falsely, and fraudulently to mislead by affirmative statements or concealment of facts in applications for registration or certificate of title is a misdemeanor in all except four States.²² The same is a felony when made under oath to obtain a certificate of title, in seven States;²³ and when so made to obtain registration, in five States.²⁴

DISCRETIONARY POWERS TO REFUSE REGISTRATION

Discretionary power is vested in the State authorities who administer motor-vehicle laws to refuse to grant registration of a motor vehicle, in 29 States²⁵ for general reasons, in 15 States²⁶ if such vehicle is suspected of being stolen or embezzled, in four States²⁷ if it would work a fraud on the rightful owner or lienholder, in 25 States²⁸ in case of prior suspension or revocation against the applicant or vehicle, and in Vermont if applicant has been on the relief rolls for more than 1 year. From the exercise of such discretion in denying registration, an appeal to the courts is provided.

Likewise, applications for registration or certificate of title shall be refused: If the information given therein is false or fraudulent, in 34 States;²⁹ for failure to supply information required, in 38 States;³⁰

¹⁹ Alabama, Arizona, Connecticut, Georgia, Indiana, Iowa, Kentucky, Maine, Maryland, Mississippi, Montana, Nebraska, Oklahoma, Pennsylvania, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia, and the District of Columbia.

²⁰ Arizona, California, Colorado, Connecticut, Delaware, Kansas, Louisiana, Missouri, Nebraska, Nevada, New Mexico, North Dakota, Oregon, Pennsylvania, Texas, Utah, Virginia, and Wyoming.

²¹ Colorado, Florida, Idaho, Illinois, Maryland, Minnesota, Missouri, Montana, Nevada, New Jersey, North Carolina, North Dakota, Pennsylvania, South Dakota, Utah, Virginia, West Virginia, and the District of Columbia.

²² Mississippi, Nebraska, Tennessee, and Texas.

²³ Georgia, Idaho, Indiana, Kansas, Oklahoma, South Dakota, and West Virginia.

²⁴ Alabama, Maryland, Oklahoma, South Dakota, and West Virginia.

²⁵ Alabama, Arkansas, Florida, Idaho, Illinois, Iowa, Kansas, Kentucky, Maine, Massachusetts, Michigan, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, Utah, Washington, West Virginia, Wyoming, and the District of Columbia.

²⁶ Arizona, California, Colorado, Delaware, Idaho, Kansas, Louisiana, Maine, Massachusetts, Montana, North Dakota, Pennsylvania, South Dakota, Utah, and Washington.

²⁷ Mississippi, Pennsylvania, Utah, and Wyoming.

²⁸ Alabama, California, Florida, Georgia, Idaho, Illinois, Kansas, Louisiana, Maryland, Massachusetts, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Ohio, Oklahoma, Utah, Vermont, Virginia, and West Virginia.

²⁹ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nevada, New Hampshire, New Mexico, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, West Virginia, Wisconsin, and the District of Columbia.

³⁰ Arizona, California, Colorado, Connecticut, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and the District of Columbia.

if vehicle is mechanically unfit or unsafe, in 32 States;³¹ and if applicant is not otherwise entitled, in 41 States.³²

EXEMPTIONS

The following classes of motor vehicles are specifically exempted from paying registration fees:

Vehicles owned by the United States, in 17 States;³³ by the State or its subdivisions, in 27 States;³⁴ farm tractors, in 27 States;³⁵ road rollers, in 25 States;³⁶ equipment used by fire and police departments, in 8 States;³⁷ school busses, in 2 States;³⁸ vehicles owned and registered in an adjoining State by persons residing within 15 miles of the State line, in 2 States.³⁹ New Jersey exempts vehicles owned by hospitals, humane societies, and the Red Cross. Connecticut exempts vehicles owned by municipalities and military departments.

INSPECTION OF RECORDS

Thirty-six States⁴⁰ provide that the official records of the administrative agency, as required to be kept by motor vehicle laws, shall be open to public inspection. Among some of these and in certain other States, publication of such records is required, although none of the other States require the official copies of such records to be open for public inspection. In certain States the record of chauffeurs' licenses is open to public inspection. The administrative agency in some States is empowered by statute to make rules and regulations providing for the inspection of its records, or to furnish copies thereof. Confidential records and reports, such as reports required to be submitted by parties involved in motor vehicle accidents and reports of the results of medical examinations, are generally declared by statute not to be open to public inspection nor admissible in evidence.

³¹ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Nevada, New Hampshire, New Jersey, New Mexico, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and the District of Columbia.

³² Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

³³ Alabama, Arkansas, Colorado, Florida, Idaho, Iowa, Michigan, Minnesota, New Jersey, New Mexico, Oregon, South Dakota, Tennessee, Texas, Washington, Wyoming, and the District of Columbia.

³⁴ Alabama, Arkansas, Delaware, Florida, Idaho, Indiana, Iowa, Kentucky, Maine, Maryland, Michigan, Minnesota, Missouri, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, South Dakota, Tennessee, Texas, Virginia, Washington, Wisconsin, Wyoming, and the District of Columbia.

³⁵ Arizona, California, Colorado, Georgia, Idaho, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Nebraska, Nevada, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming.

³⁶ Arizona, California, Colorado, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Nebraska, Nevada, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Utah, Vermont, Virginia, West Virginia, and Wyoming.

³⁷ Colorado, Kansas, Massachusetts, Mississippi, New York, Ohio, Oklahoma, and Vermont.

³⁸ Kansas and South Carolina.

³⁹ Connecticut and Massachusetts.

⁴⁰ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nevada, New Hampshire, New York, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming.

REGISTRATION CERTIFICATE OR CARD

All States provide for the proper administrative agency to issue registration cards to the owners of motor vehicles registered. The contents prescribed for the certificate of registration include the name and address of the owner, date of issue, number assigned, and description of the motor vehicle.

The registration card is required to be signed by the holder in all but six States.⁴¹ It also is required by all States to be kept on, or to be displayed in, the vehicle for which it is issued, or by the person in control of such vehicle. A few States provide that the operator shall be excused for being unable immediately to display the registration certificate on demand, if it is existent and is presented to the court within a specified short time. All States authorize peace officers to demand display of the registration certificate.

EXPIRATION OF REGISTRATION

Registration is everywhere required annually, and expires on December 31 or the following January 1 in all of the States except 12. Of these 12 States, 1⁴² fixes the expiration date on February 28, 8⁴³ fix the expiration date on March 31 or April 1, 1⁴⁴ on June 30, and 2⁴⁵ on October 31.

REGISTRATION PLATES

Two registration plates are issued for each motor vehicle registered, in all States except three,⁴⁶ the latter requiring only one plate. The plates are required to be displayed on the front and rear of the motor vehicle for which issued. In the States which require only one plate it must be displayed on the rear of the vehicle to which assigned.

Eight States⁴⁷ require registration plates to be readable in daylight for 100 feet. Indiana specifies a distance of 60 feet but does not indicate whether this is intended to apply at night or in the daytime. The States that require rear plates to be so illuminated at night as to be readable for specified distances are discussed on page 105. The other States generally prescribe a minimum height of letters and figures on plates and a minimum width of lines of such letters and figures to make them readable under normal conditions when kept clean and un mutilated.

Rigid fastening of registration plates to vehicles to prevent swinging is required in 23 States.⁴⁸

Registration plates are required to be kept clean and readable in 29 States.⁴⁹

⁴¹ Georgia, Maryland, Mississippi, Oklahoma, Texas, and Vermont.

⁴² Connecticut.

⁴³ Maryland, New Hampshire, Ohio, Oklahoma, Tennessee, Texas, Vermont, and Virginia.

⁴⁴ West Virginia.

⁴⁵ Alabama and South Carolina.

⁴⁶ Arkansas, Florida, and Mississippi.

⁴⁷ Arizona, Colorado, Idaho, Louisiana, Nevada, North Dakota, Utah, and Pennsylvania.

⁴⁸ Georgia, Idaho, Indiana, Kentucky, Louisiana, Maine, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Utah, Vermont, Virginia, and Wyoming.

⁴⁹ Florida, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Tennessee, Texas, Utah, Vermont, Washington, and West Virginia.

SPECIAL REGISTRATION PLATES FOR MOTOR VEHICLE DEALERS

Motor-vehicle manufacturers, transporters, and dealers may obtain special registration plates in all States, in lieu of separately registering each vehicle. It is provided in every State that such plates shall be different from those in general use and shall identify by a distinguishing number the dealer to whom they are issued. The dealer may transfer these plates from car to car, as may be convenient for purposes of sale or demonstration. In 10 States⁵⁰ a record must be kept of the time during which each set of plates is used on a particular car. Such special plates must be renewed annually, in the same manner as other plates.

LICENSING OF MOTOR CAR DEALERS

In addition to the above provisions relating to special registration plates, 21 States⁵¹ require that dealers in new motor vehicles and used cars traded in must obtain a license to conduct business. These States and five additional States⁵² require that dealers in used motor vehicles obtain a license. Those engaged in dismantling and wrecking vehicles in order to sell the parts must obtain a similar license in eight States.⁵³ The application for any such licenses must be on an official form containing the name, address, and place of business of the applicant, and other information which the licensing agency may desire. Such licenses must be renewed annually in each State where they are required.

Upon removing to a new place of business or opening an additional place, a dealer in new or used cars, in 10 States,⁵⁴ must obtain a supplemental license for which no fee is charged. He must obtain a new license and pay an additional fee in eight other States,⁵⁵ while in the remaining eight States⁵⁶ which require such licenses the law is silent on this point. Holders of dealers' licenses in 11 States⁵⁷ must maintain a record of all motor vehicles sold or exchanged. In 12 more States,⁵⁸ such record is required only for used vehicles. A record must be kept of all used engines sold in nine States,⁵⁹ and of all used parts and accessories sold in eight States.⁶⁰ All such records shall include the name and address of the buyer and a sufficient description of the goods sold to identify them. Such records are explicitly made available for the inspection of peace officers by the statutes of

⁵⁰ Arizona, Delaware, Idaho, Iowa, Kansas, New Mexico, North Dakota, Utah, Vermont, and Virginia.

⁵¹ California, Connecticut, Florida, Georgia, Idaho, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Minnesota, Montana, Nebraska, New Jersey, New Mexico, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, and Vermont.

⁵² California, Colorado, Connecticut, Florida, Georgia, Idaho, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nebraska, New Jersey, New Mexico, North Dakota, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, and West Virginia.

⁵³ Connecticut, Massachusetts, Michigan, New Hampshire, Oregon, Utah, Vermont, and West Virginia.

⁵⁴ Florida, Massachusetts, Michigan, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, Oregon, and Utah.

⁵⁵ California, Colorado, Connecticut, Idaho, Iowa, Kentucky, Rhode Island, and South Dakota.

⁵⁶ Georgia, Louisiana, Maryland, Minnesota, New Jersey, Pennsylvania, Vermont, and West Virginia.

⁵⁷ Arkansas, California, New Mexico, New York, North Carolina, North Dakota, Oregon, Rhode Island, South Carolina, South Dakota, and Utah.

⁵⁸ Arizona, Colorado, Delaware, Florida, Idaho, Illinois, Massachusetts, Michigan, Montana, Oklahoma, Texas, and West Virginia.

⁵⁹ Colorado, Florida, Illinois, Massachusetts, Montana, Oklahoma, Texas, Utah, and West Virginia.

⁶⁰ Colorado, Illinois, Massachusetts, Michigan, Montana, Oklahoma, Texas, and Utah.

20 States.⁶¹ Twenty-six States⁶² require that a report of all vehicles sold by dealers shall be made to the motor vehicle department at stated intervals,⁶³ independently of applications for new registration.

REGISTRATION OF PRIVATE PASSENGER VEHICLES OF NONRESIDENTS

Every State has some statutory provision exempting nonresidents from registration while sojourning in the State or traveling on its highways in a private vehicle operated for pleasure. Although some States require nonresidents to apply for a temporary permit within a short period after entering the State, such permit is usually issued free of cost or for a nominal amount which is practically equivalent to an exemption. The laws upon the subject are, however, so much at variance that it is not possible within the scope of this report to cover in detail the provisions in the different statutes. When a motor vehicle is used for hire or profit, or for any business or commercial purpose, or when it is used by a foreign corporation doing business in the State, it usually must be registered and is subject to payment of the same fees required for like vehicles from residents of the State.

Twenty-eight States⁶⁴ grant unlimited reciprocity to nonresidents while operating private cars for pleasure on their public highways. The exemption from registration fees will extend for such period as like privileges are granted by the State of the nonresident, but generally not beyond the expiration of the registration rights of such nonresident according to the laws of his State.

Three States⁶⁵ exempt a nonresident from registration for a period of 30 days, 3⁶⁶ for 60 days, 10⁶⁷ for 90 days, and Arizona for 120 days. Mississippi and Texas grant a 25-day exemption at the end of which, for fees of \$1 and 50 cents, respectively, an extension which is good for 120 days may be obtained. Louisiana grants a 30-day exemption, upon expiration of which the nonresident may get a temporary permit good for 4 months from date of entry after payment of a fee of \$1. Virginia grants a 6 months' exemption to foreign passenger cars, but if any such car is operated in the State for a consecutive period of over 30 days the owner must temporarily register and pay

⁶¹ Colorado, Delaware, Florida, Idaho, Illinois, Massachusetts, Michigan, Montana, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Texas, Utah, and West Virginia.

⁶² Arizona, Arkansas, California, Colorado, Delaware, Georgia, Idaho, Indiana, Kansas, Louisiana, Maine, Maryland, Massachusetts, Mississippi, Missouri, New Hampshire, New Mexico, North Carolina, North Dakota, South Dakota, Texas, Vermont, Virginia, Washington, Wisconsin, and Wyoming.

⁶³ See following table:

Report to be made—	Number of States having provision	Report to be made—	Number of States having provision
Immediately.....	14	Within 3 days.....	1
Within 1 day.....	2	Within 7 days.....	1
Within 2 days.....	1	Within 1 month.....	7

⁶⁴ California, Colorado, Connecticut, Delaware, Florida, Idaho, Illinois, Iowa, Kansas, Kentucky, Maine, Massachusetts, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, Wisconsin, and the District of Columbia.

⁶⁵ Alabama, Georgia, and Tennessee.

⁶⁷ Indiana, Montana, and Oklahoma.

⁶⁶ Arkansas, Maryland, Michigan, New Mexico, North Dakota, South Carolina, South Dakota, Washington, West Virginia, and Wyoming.

a fee of 25 cents unless such registration is not required of a Virginia car operated in the nonresident's home State.

From the foregoing it will be noted that a nonresident enjoys an exemption of not less than 25 days in any State.

Several States require that all nonresidents shall apply for a special registration certificate. Nonresidents must register, although they are not required to pay any fees, in the following States: Within 24 hours, in Oregon; within 48 hours, in Idaho; within 5 days, in California, Nevada, and Utah; within 10 days, in Arizona, Iowa, Minnesota, and Oklahoma; and after 30 days, in Arkansas and Massachusetts. In the latter State a free registration permit will be issued only after the nonresident has given proof of having complied with the State law requiring automobile liability insurance.

REGISTRATION OF COMMERCIAL VEHICLES OF NONRESIDENTS

Provisions in the State laws regarding the privileges granted as to registration of common-carrier busses, taxicabs, other passenger cars for hire, privately operated trucks, and trucks for hire, vary widely. A brief summary of these provisions in each State, therefore, follows:

Alabama permits occasional trips (2 per month of not over 5 days' duration) of motor vehicles for commercial purposes upon payment of a fee of \$1.50, which entitles the payee to make 2 trips within any month. No other exemption is granted to motor vehicles for hire. Circuses and other show people operating their own vehicles must register.

Arizona provides that all vehicles transporting persons or property for hire, or regularly operated in connection with any business in the State, must be registered.

Arkansas grants free permits to privately operated motor vehicles used for the sole purpose of marketing farm products, or for hauling merchandise and farm products purchased within the State, or to transport the owner to and from his place of employment. Such private vehicles used for commercial purposes are limited, however, to four trips per month. Other vehicles operated for hire must be registered.

California requires vehicles operated for profit or hire to be registered.

Colorado provides unlimited exemption on a reciprocal basis for private-passenger and commercial vehicles but common carriers of persons or property must be registered.

Connecticut grants full reciprocity for taxicabs, livery cars, chartered busses, busses on special trips, and trucks and trailers that are not operated for hire. Common and contract carriers must register.

Delaware allows unlimited exemption, except as to vehicles used for the transportation of persons or property for hire, either regularly according to schedule, or for a consecutive period exceeding 30 days. A vehicle used by a non-resident or foreign corporation in the course of business within the State must be registered.

Florida allows unlimited exemption except when the owner accepts employment in Florida or operates a vehicle for hire. Foreign corporations doing business in the State and persons entering children in the public schools must procure registration licenses.

In Georgia commercial motor vehicles carrying owner's merchandise or property are allowed exemption for four trips per month.

Full reciprocity is granted to motor vehicles conveying farm, dairy, or orchard products, from place of production to market as long as products remain property of the producer. Vehicles for hire must be registered.

Idaho recognizes nonresident registration to the extent of reciprocity, except for vehicles used for hire or profit, or operated by a foreign corporation doing business in the State.

Unlimited reciprocity is granted in Illinois, except as to vehicles of foreign corporations used in connection with places of business within the State.

Indiana requires that commercial trucks and busses having a regular schedule or fixed termini, and vehicles operated for compensation, must be registered.

Carriers for hire in Iowa must procure a public-utility permit and trucks operated by companies engaged in the construction of highways must be registered.

Kansas grants full reciprocity to ambulances, funeral coaches, farm tractors, school busses, trucks hauling farm products to market or transporting supplies for the owner or his neighbors. Private and contract carriers are allowed one trip per month. Common carriers must register.

Kentucky does not exempt carriers for hire from registration.

In Louisiana a private truck owner hauling his own property is permitted occasional trips, not exceeding four per month of 4 days' duration each, upon securing a free permit. For-hire vehicles are permitted irregular trips of not more than two per month of 4 days' duration each upon the same conditions as private truck owners. These privileges are granted only on a reciprocal basis. Foreign corporations operating vehicles in connection with some place of business in the State must register.

Carriers for hire in Maine must have public-utility permits and vehicles used for hire, vehicles of foreign corporations doing business in the State, trucks, busses, and trailers with a carrying capacity of over 1½ tons must be registered.

Maryland extends reciprocity to freight common carriers in interstate operation after having obtained a free permit and upon showing compliance with State insurance laws. Common carriers engaged in intrastate operations, and vehicles carrying persons for hire over fixed routes, must be registered.

Common and contract carriers in Massachusetts must have a public-utility permit.

Michigan allows 10 days' exemption for commercial vehicles.

Minnesota does not extend exemption to vehicles of owners temporarily residing in the State and regularly employed under a contract for 6 months or more; nor to motor vehicles engaged in transporting property for hire; nor to trucks, tractors, truck-tractors, trailers, and semi-trailers, having an unloaded weight in excess of 5,000 pounds. Chartered busses and trucks used in owner's business are allowed occasional trips.

Mississippi allows commercial vehicles to be operated under temporary permits issued upon payment of certain fees required by law.

Missouri requires vehicles operated for hire to be registered.

Montana makes no provision for exemption of vehicles used in any gainful occupation or business enterprise.

In Nebraska trucks and busses doing an intrastate business, and other vehicles for hire, must be registered.

Nevada requires vehicles operated for hire to be registered.

New Hampshire allows an exemption of 20 days for all commercial vehicles of 3 tons or less registered capacity. If of over 3 tons capacity, a free permit good for 5 consecutive or separate days must be obtained for each such vehicle before entering the State.

New Jersey grants full reciprocity but imposes a mileage tax on interstate busses used for hire.

New Mexico permits occasional trips, not exceeding 4 days each, by vehicles for compensation or hire used exclusively for transportation of livestock, lumber, farm, or dairy products. Other vehicles operated for profit or hire must have a permit from the corporation commission.

New York provides full reciprocity, except for vehicles used on contracts for public improvements and vehicles used for intrastate transportation of persons or property for hire or profit.

North Carolina grants unlimited exemption, except to common carriers.

North Dakota provides no exemption for vehicles operated for profit or hire. Vehicles of foreign corporations doing business in the State must be registered.

Ohio requires registration of vehicles carrying property or persons for hire between points in Ohio, and of common carrier busses operating on regular schedule.

Oklahoma requires that vehicles used for commercial or industrial purposes and motor busses and trucks carrying passengers or property for hire must be registered.

Oregon does not extend exemption to nonresidents accepting gainful employment in the State, to vehicles operated in intrastate business for hire, nor to vehicles owned by foreign corporations and operated in connection with their places of business in the State.

Pennsylvania denies the exemption privilege to a nonresident who has a regular place of abode or business in the State for more than 30 days. Busses operated for transportation of passengers for compensation, either regularly according to schedule or for a period exceeding 30 days in a calendar year, are required to be registered.

Rhode Island requires that vehicles operated for hire or used principally in connection with a place of business maintained within the State must be registered.

South Carolina denies exemption to an owner engaged in any work or occupation in the State. Commercial motor vehicles are allowed four trips per month. Trucks and other vehicles hauling farm produce from field to market are allowed full reciprocity.

South Dakota provides that carriers for hire must pay a road tax and have a permit from the railroad commission.

Tennessee allows occasional trips, not to exceed eight in any calendar month, by trucks and trailers operated by owner or authorized agent in transporting goods, wares, or merchandise which are the property of the owner of such vehicle. Vehicles operated for profit or hire must be registered.

Texas permits commercial vehicles not operated for hire to enter the State for five trips per month of 5 days' duration each. Vehicles operated for hire are allowed two trips per month of 4 days each.

Privately owned vehicles used only for marketing farm products raised exclusively by the owner, or for making trips to purchase goods, wares, and merchandise, are allowed to enter the State freely. These privileges are granted on a reciprocal basis.

Utah denies exemption to foreign corporations with a place of business in the State or to persons accepting employment or receiving revenue from property within Utah. Commercial vehicles are allowed to make a single trip upon obtaining a free permit.

Vermont does not extend the exemption privilege to vehicles operated for hire regularly over fixed routes, to those used for profit or hire between points in Vermont, to vehicles kept in Vermont during winter months, or to those carrying an auxiliary fuel tank or a single tank having a capacity of over 35 gallons. Persons doing business in the State for 3 months or foreign corporations authorized to do business in Vermont are treated as residents.

Virginia grants no exemption to carriers on fixed routes. Foreign corporations or nonresidents engaged in business in the State are deemed residents.

Washington requires that vehicles owned and operated by foreign corporations having places of business in the State must be registered.

West Virginia allows occasional trips to vehicles for hire.

Wisconsin does not grant exemption to vehicles for hire. Commercial vehicles are allowed one trip per year unless a reciprocity agreement exists with their home State. Chartered busses are allowed occasional trips.

Wyoming requires that vehicles operated for hire or for profit must be registered.

The District of Columbia grants unlimited exemption except as to common carriers over regular routes.

OFFENSES AGAINST REGISTRATION LAWS

In applying for the registration of a motor vehicle, it is a statutory offense in 45 States⁶⁸ to make deliberately a false statement. Particular types of false statements are explicitly prohibited in some States. It is forbidden to use a fictitious name in 23 States,⁶⁹ including 2⁷⁰ which have no general prohibition of false statements in their registration laws; or to conceal a material fact, in 18 States;⁷¹ or to commit any fraud making such application, in 21 States.⁷² There are specific statutory provisions in every State prohibiting the operation of motor vehicles on the highways without valid registration and display of license plates.

It is made a crime in 24 of the States⁷³ that have certificate of title or ownership laws to forge or alter with fraudulent intent any such certificate; or any assignment thereon, in all of these States but

⁶⁸ All States except Mississippi, Nebraska, Tennessee, and Texas.

⁶⁹ Arizona, California, Colorado, Delaware, Georgia, Idaho, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Utah, Vermont, and Virginia.

⁷⁰ Nebraska and Texas.

⁷¹ Arizona, California, Colorado, Delaware, Florida, Georgia, Idaho, Iowa, Kansas, Louisiana, Nevada, New Mexico, North Carolina, North Dakota, Pennsylvania, Utah, Vermont, and Virginia.

⁷² Arizona, California, Colorado, Delaware, Georgia, Idaho, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Minnesota, Nevada, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, Utah, Vermont, and Virginia.

⁷³ California, Colorado, Delaware, Florida, Idaho, Illinois, Indiana, Maryland, Michigan, Missouri, Montana, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

Oklahoma. Twenty States⁷⁴ make it a crime to forge or alter a registration certificate, and in 24 States⁷⁵ the counterfeiting or fraudulent alteration of license plates is specifically declared to be criminal. One who holds registration documents, knowing them to be forged or altered, is guilty of a crime in 23 States.⁷⁶

SUSPENSION OR REVOCATION OF REGISTRATION

The administrative agency is authorized to suspend or revoke the registration of a motor vehicle under certain circumstances in many States. Some of the reasons for forfeiture of registration set out in the statutes are that the documents were erroneously issued, in 7 States;⁷⁷ that the vehicle registered is mechanically unsafe, in 16 States;⁷⁸ that it has been dismantled and wrecked, and the owner has failed to surrender his documents, in 10 States;⁷⁹ that the requisite fees and taxes have not been paid, in 9 States;⁸⁰ that the registration documents have been knowingly displayed on the wrong vehicle, in 12 States;⁸¹ and that unlawful use has been made of the registration documents, in 19 States.⁸²

A general power of revocation or suspension is given the administrative agency, to be exercised at discretion, in 10 States.⁸³

Motor-vehicle dealers and manufacturers may have their special registration plates and certificates revoked for various enumerated reasons in 23 States.⁸⁴

The laws of 29 States⁸⁵ specifically provide that, upon their forfeiture, registration documents shall be surrendered to the administrative agency.

CERTIFICATE OF TITLE

A certificate of title in 25 States,⁸⁶ a certificate of ownership in 2 States,⁸⁷ and a bill of sale in 5 States⁸⁸ must be obtained for a

⁷⁴ California, Delaware, Florida, Georgia, Idaho, Iowa, Minnesota, Missouri, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

⁷⁵ Alabama, Arkansas, California, Connecticut, Florida, Georgia, Iowa, Massachusetts, Michigan, Minnesota, Missouri, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Pennsylvania, Texas, Utah, Vermont, Virginia, Washington, and Wisconsin.

⁷⁶ California, Delaware, Florida, Idaho, Indiana, Iowa, Maryland, Michigan, Missouri, Montana, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

⁷⁷ California, Delaware, Florida, Iowa, Michigan, Pennsylvania, and Utah.

⁷⁸ Arizona, California, Colorado, Delaware, Iowa, Louisiana, Maryland, New Hampshire, New Mexico, North Carolina, North Dakota, Pennsylvania, Texas, Utah, Vermont, and Virginia.

⁷⁹ California, Illinois, Iowa, Michigan, New Mexico, Oregon, Pennsylvania, Rhode Island, Utah, and Wisconsin.

⁸⁰ Arizona, California, Colorado, Delaware, Florida, Iowa, New Mexico, Pennsylvania, and Utah.

⁸¹ Alabama, Arizona, California, Indiana, Iowa, Louisiana, Maryland, North Carolina, Pennsylvania, South Carolina, Utah, and Vermont.

⁸² Arizona, California, Colorado, Delaware, Florida, Iowa, Louisiana, Maryland, Mississippi, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Pennsylvania, South Carolina, Utah, Vermont, and Virginia.

⁸³ Florida, Illinois, Massachusetts, Minnesota, North Dakota, Oregon, Rhode Island, South Dakota, Washington, and West Virginia.

⁸⁴ Arkansas, California, Delaware, Idaho, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oregon, Rhode Island, South Dakota, Utah, Vermont, Washington, and West Virginia.

⁸⁵ Arizona, California, Colorado, Connecticut, Delaware, Idaho, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Minnesota, Nevada, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, Washington, Wisconsin, and the District of Columbia.

⁸⁶ Arizona, Colorado, Delaware, Florida, Idaho, Illinois, Indiana, Maryland, Michigan, Montana, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

⁸⁷ California and Missouri.

⁸⁸ Kentucky, Mississippi, New Jersey, Ohio, and Texas.

motor vehicle before it may be registered or operated on the highways. In some of the other States other evidence of ownership satisfactory to the administrative agency is accepted. A registration card that has been endorsed and delivered in transferring a motor vehicle is accepted as adequate evidence of ownership in other States; some States in this group require that such assigned certificate shall be supported by a bill of sale, receipt, or other document describing the vehicle.

Where the contents of the certificate of title are prescribed by statute, it is required that it show all of the information in the application therefor or in the certificate of registration, including a detailed description of the vehicle and a blank form on the reverse side thereof for assignment in the event of transfer.

Delivery of the certificate of title is directed by statute to the applicant in 17 States;⁸⁹ to lienholders, in 10 States;⁹⁰ as directed in the application, in 7 States;⁹¹ and to the owner when the lien is discharged, in 8 States.⁹²

Failure to endorse and deliver certificate of title to the transferee with the motor vehicle in case of transfer is made a felony by statute in 2 States⁹³ and a misdemeanor in all of the others that require a certificate of title.

Seven States⁹⁴ declare by statute that the prior owner shall not be responsible for future negligent operations of a motor vehicle after having endorsed the certificate of title or ownership, or the certificate of registration, and delivered same to the transferee with the motor vehicle.

TRANSFERS OF TITLE OR INTEREST

When the ownership of a registered motor vehicle is transferred, the registration of such vehicle in the name of the transferor expires in every State. In 43 States⁹⁵ the transferee must apply for a new registration certificate, while in the remaining 6 States⁹⁶ a new card is not issued, the change of ownership being noted on the old card and in the records of the administrative agency.

In 24 States⁹⁷ the license plates issued to the transferor must be left attached to the vehicle and the right to use such plates vests in the transferee when he secures his new registration card or the proper notation of change of ownership on the existing card, as may be required.

⁸⁹ Florida, Idaho, Illinois, Indiana, Maryland, Missouri, Montana, Nevada, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Utah, West Virginia, Wisconsin, and the District of Columbia.

⁹⁰ California, Illinois, Indiana, Montana, North Dakota, Oregon, Pennsylvania, Utah, Virginia, and the District of Columbia.

⁹¹ Florida, Illinois, Indiana, Michigan, Nevada, New Mexico, and North Carolina.

⁹² Michigan, Montana, North Dakota, Oregon, Pennsylvania, Utah, Virginia, and the District of Columbia.

⁹³ Indiana and Michigan.

⁹⁴ California, Iowa, Michigan, Nevada, Pennsylvania, Utah, and the District of Columbia.

⁹⁵ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Virginia, Vermont, West Virginia, Wyoming, and the District of Columbia.

⁹⁶ Mississippi, South Carolina, Tennessee, Texas, Washington, and Wisconsin.

⁹⁷ Alabama, California, Florida, Georgia, Idaho, Iowa, Kansas, Kentucky, Louisiana, Michigan, Mississippi, Montana, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Washington, and Wisconsin.

In 24 other States⁹⁸ the license plates must be removed from the vehicle upon change of ownership. In 20 of these States⁹⁹ the transferor is entitled to retain these plates and use them on another vehicle of the same class registered by him within a limited period after such transfer or sale, but 6¹ of the said 20 States require that they be forwarded to the administrative agency if they are not to be used on another vehicle. In the remaining 4 States² in this group the plates must be forwarded to the administrative agency immediately upon their removal from the vehicle which is transferred. In Virginia an owner who transfers a registered motor vehicle may have the number plates thereon assigned to another vehicle of like design and weight titled in such owner's name or he may leave them attached to the vehicle and transfer them to the grantee.

The registration card is specifically required to be forwarded by the vendor or transferor to the administrative agency in 26 States³ and to the transferee in 10 States.⁴

All States that provide for delivery of the registration card to the transferee, except California, require that such card shall be endorsed by the transferor so as to indicate the change of ownership.

In the 27 States⁵ which require a certificate of title or ownership, the transferor must endorse and deliver such certificate to the transferee upon transfer of a registered motor vehicle; in 23 of these States⁶ a warranty of title must be executed on the reverse of the certificate of title; and in 24 such States⁷ the transferor must also give notice thereon of all liens or encumbrances on the vehicle. Nineteen States⁸ require that the warranty of title and the notice of liens and encumbrances on the certificate of title be verified under oath.

Transfers by operation of law of title to or interest in a registered vehicle must be reported to the administrative agency in 27 States.⁹ Such transfers terminate the registration of such vehicles, in 23

⁹⁸Arizona, Arkansas, Colorado, Connecticut, Delaware, Illinois, Indiana, Maine, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, West Virginia, Wyoming, and the District of Columbia.

⁹⁹Arizona, Delaware, Illinois, Indiana, Maine, Maryland, Massachusetts, Missouri, Nebraska, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia, Wyoming, and the District of Columbia.

¹Arizona, Delaware, Indiana, Nebraska, Rhode Island, and the District of Columbia.

²Colorado, Connecticut, Minnesota, and Utah.

³Colorado, Connecticut, Delaware, Florida, Idaho, Indiana, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Hampshire, New Mexico, North Carolina, North Dakota, Oklahoma, Rhode Island, South Dakota, Vermont, Virginia, West Virginia, and the District of Columbia.

⁴Arizona, Arkansas, California, Georgia, Kentucky, Louisiana, Nevada, Texas, Utah, and Washington.

⁵Arizona, California, Colorado, Delaware, Florida, Idaho, Illinois, Indiana, Maryland, Michigan, Missouri, Montana, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

⁶Arizona, Colorado, Delaware, Florida, Idaho, Illinois, Indiana, Maryland, Michigan, Missouri, Montana, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Utah, Virginia, West Virginia, Wyoming, and the District of Columbia.

⁷Colorado, Delaware, Florida, Idaho, Illinois, Indiana, Maryland, Michigan, Missouri, Montana, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

⁸Colorado, Delaware, Florida, Idaho, Illinois, Maryland, Michigan, Montana, New Mexico, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Dakota, Utah, Virginia, West Virginia, Wyoming, and the District of Columbia.

⁹Alabama, Arizona, California, Colorado, Delaware, Idaho, Illinois, Kansas, Maryland, Michigan, Montana, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Virginia, Washington, Wisconsin, Wyoming, and the District of Columbia.

States,¹⁰ 10¹¹ of which, however, permit such vehicles to be moved short distances without new licenses.

In 11 States¹² the husband, or wife, or other distributee may secure a transfer of the existing registration of the title or interest of a deceased motor vehicle owner.

Ten States¹³ require dealers to notify the department upon acquiring a registered motor vehicle, and 21 States¹⁴ require dealers to keep a record of all vehicles coming into their possession, which record shall be open to inspection during reasonable hours by the police or by the employees of the State administrative agency. All States exempt dealers from obtaining a new registration for used cars acquired and permit such cars to be operated under the special plates issued to dealers for demonstration purposes.

Fifteen States¹⁵ require dealers to obtain a certificate of title for every vehicle acquired if none was assigned to them at the time of the transfer. In most States dealers are required to demand a certificate of title or other evidence of ownership before buying or acquiring any registered motor vehicle. It is illegal in those States to acquire possession of a used automobile without first obtaining documentary evidence of ownership.

Upon the transfer of a previously registered motor vehicle either the old or new owner, or both, must, in 33 States,¹⁶ notify the department of the sale or transfer of title or interest.

In four States¹⁷ a lienholder may assign his interest without the consent of the owner, provided the owner's interest is not affected.

Two States¹⁸ expressly provide that no title to or interest in a motor vehicle can be transferred unless the vehicle is registered in the State.

REPORTS OF STOLEN AND RECOVERED VEHICLES

Twenty-three States require that every peace officer who learns that a motor vehicle has been stolen must report the theft to the State administrative agency, such reports to be made immediately in 18 States,¹⁹ daily in 2 States,²⁰ weekly in 2 States,²¹ and monthly in 1 State.²² In all but one of these States,²³ similar reports must

¹⁰ Alabama, Arizona, California, Colorado, Delaware, Idaho, Illinois, Kansas, Michigan, Montana, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Wyoming, and the District of Columbia.

¹¹ Arizona, Colorado, Delaware, Idaho, Kansas, Nevada, North Carolina, North Dakota, Utah, and the District of Columbia.

¹² California, Connecticut, Massachusetts, Michigan, Montana, New Hampshire, New Jersey, New York, North Carolina, Utah, and Virginia.

¹³ Alabama, California, Indiana, Maryland, Massachusetts, Nevada, Pennsylvania, South Carolina, Utah, and Virginia.

¹⁴ Arizona, Colorado, Delaware, Florida, Idaho, Illinois, Indiana, Massachusetts, Michigan, Missouri, Montana, Nebraska, New Hampshire, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Rhode Island, South Dakota, and West Virginia.

¹⁵ Arizona, Illinois, Indiana, Michigan, Missouri, Montana, Nebraska, Nevada, New Mexico, North Carolina, Oklahoma, Virginia, Washington, West Virginia, and the District of Columbia.

¹⁶ Alabama, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Idaho, Illinois, Indiana, Kansas, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Rhode Island, South Dakota, Tennessee, Vermont, Virginia, West Virginia, and the District of Columbia.

¹⁷ California, Montana, North Dakota, and Utah.

¹⁸ California and Indiana.

¹⁹ Colorado, Delaware, Florida, Iowa, Michigan, Minnesota, Mississippi, Montana, New Mexico, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Dakota, Utah, Washington, West Virginia, and Wisconsin.

²⁰ Illinois and Indiana.

²¹ California and Connecticut.

²² New York.

²³ Connecticut.

be made within the same time limits when a peace officer learns of the recovery of a vehicle previously reported stolen.

The owner of a motor vehicle that has been stolen is explicitly authorized to report such fact in 17 States.²⁴ He is required in all of these States to report the recovery of a vehicle previously reported by him as stolen. In four States²⁵ if the vehicle was embezzled, a theft report will not be received by the State administrative agency until a warrant has been obtained for the arrest of the embezzler.

The administrative agency in 28 States²⁶ is directed by statute to file theft reports upon their receipt. The registration of the stolen vehicle is suspended for the remainder of the registration year in 12 of these States,²⁷ until the vehicle is recovered in 10,²⁸ for 3 years in 2,²⁹ and for 5 years in 1 State.³⁰ In those States that limit the suspension to the registration year, it may be extended for another year by filing an affidavit that the vehicle remains unfound.

Lists of motor vehicles stolen or embezzled are required to be compiled weekly in 8 States³¹ and monthly in 24 States.³² Such lists are required by statute to be distributed as follows: In 22 States³³ to peace officers therein, in 19 States³⁴ to the proper administrative agency of other States, and in 4 States³⁵ as the administrative agency may deem proper. In Utah such lists must be posted in the administrative agency's office in lieu of other publication and distribution.

It is provided in 6 States³⁶ that when a peace officer finds an abandoned motor vehicle, he shall seize it, hold it for a specified period, and if the owner cannot be found after a reasonable effort to locate him, he shall sell the vehicle at auction and hold the net proceeds of the sale for the owner. In South Carolina this provision applies only within cities of 20,000 or more inhabitants.

UNAUTHORIZED TAKING OF A MOTOR VEHICLE

Any person who takes a vehicle not his own without intent to steal it, but with intent to deprive the owner temporarily of its possession, commits the crime of "unlawful taking" in 36 States.³⁷ Consent of the owner to the taking of such vehicle on previous occasions is

²⁴ Arizona, California, Colorado, Delaware, Idaho, Iowa, Kansas, Louisiana, Maine, Nevada, New Mexico, North Carolina, North Dakota, Pennsylvania, Utah, Virginia, and Washington.

²⁵ California, Iowa, Utah, and Virginia.

²⁶ Arizona, California, Colorado, Delaware, Florida, Georgia, Idaho, Illinois, Iowa, Kansas, Louisiana, Maine, Michigan, Minnesota, Mississippi, Montana, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Dakota, Utah, Virginia, Washington, West Virginia, and Wisconsin.

²⁷ Arizona, California, Colorado, Delaware, Idaho, Kansas, Louisiana, Nevada, New Mexico, North Carolina, North Dakota, and Virginia.

²⁸ Iowa, Maine, Michigan, Mississippi, Montana, Oklahoma, South Dakota, Utah, Washington, and West Virginia.

²⁹ Georgia and Pennsylvania.

³⁰ Wisconsin.

³¹ Arizona, California, Illinois, Montana, Pennsylvania, Utah, Virginia, and West Virginia.

³² Colorado, Delaware, Florida, Georgia, Idaho, Indiana, Louisiana, Maine, Michigan, Minnesota, Mississippi, Montana, Nevada, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oklahoma, South Dakota, Utah, Virginia, Washington, West Virginia, and Wisconsin.

³³ Arizona, Colorado, Delaware, Florida, Idaho, Illinois, Iowa, Louisiana, Michigan, Minnesota, Mississippi, Montana, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, South Dakota, Virginia, Washington, West Virginia, and Wisconsin.

³⁴ Arizona, Colorado, Delaware, Florida, Idaho, Iowa, Michigan, Minnesota, Missouri, Montana, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, South Dakota, Washington, West Virginia, and Wisconsin.

³⁵ Indiana, Maine, New York, and Pennsylvania.

³⁶ Illinois, New Hampshire, New York, North Carolina, South Carolina, and Virginia.

³⁷ Alabama, Arizona, California, Colorado, Connecticut, Delaware, Idaho, Indiana, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nevada, New Jersey, New Mexico, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

specifically barred as a defense in 11 States.³⁸ All persons assisting in the taking or accompanying the principal offender while committing such act are guilty of the same offense in 13 States.³⁹ This crime is a misdemeanor in 23 States⁴⁰ and a felony in the remaining 13 States. This statute, popularly known as the "joy-riding" statute, is intended to make it a crime to take another's vehicle temporarily, where the absence of felonious intent prevents the taking from being punished as larceny.

RECEIVING OR DISPOSING OF STOLEN VEHICLES

It is made a crime in 28 States⁴¹ for any person to receive a motor vehicle that he knows or has reason to believe has been stolen or unlawfully taken, and in 27 States⁴² to have such vehicle in one's possession or to dispose of same with intent to pass title thereto. This crime is a misdemeanor in four such States⁴³ and a felony in the remaining 24.⁴⁴

TAMPERING WITH VEHICLES

It is a criminal offense to tamper with or willfully injure any vehicle in 31 States⁴⁵ or in 27 States⁴⁶ to break or remove any parts therefrom without consent of the owner. To climb into or upon a vehicle or to manipulate any of its mechanism is made a crime in 24 States.⁴⁷ To complete any of the above mentioned offenses it is necessary, in 22 of these States,⁴⁸ that there be an intent to injure or harm the vehicle. In the remaining nine States⁴⁹ the mere performance of the forbidden act completes the offense, regardless of the intent.

TRANSFER OF VEHICLES WITHOUT IDENTIFYING MARKS

It is unlawful in 34 States,⁵⁰ to receive, dispose of, or have in one's possession any motor vehicle or motor vehicle engine, the manufacturer's numbers or identifying marks of which have been removed,

³⁸ California, Colorado, Delaware, Idaho, Louisiana, Michigan, Minnesota, Nevada, North Carolina, Utah, and Virginia.

³⁹ California, Colorado, Delaware, Idaho, Louisiana, Michigan, Missouri, Nevada, North Carolina, Utah, Virginia, Washington, and West Virginia.

⁴⁰ Alabama, Arizona, Colorado, Connecticut, Delaware, Idaho, Iowa, Louisiana, Maryland, Missouri, Nevada, New Jersey, New Mexico, North Carolina, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, and Wisconsin.

⁴¹ Colorado, Delaware, Florida, Idaho, Indiana, Iowa, Louisiana, Maryland, Massachusetts, Michigan, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Virginia, Washington, West Virginia, and Wyoming.

⁴² Same as note 41, except New Jersey.

⁴³ Florida, Louisiana, Maryland, and Massachusetts.

⁴⁴ Colorado, Delaware, Idaho, Indiana, Iowa, Michigan, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Virginia, Washington, West Virginia and Wyoming.

⁴⁵ California, Colorado, Connecticut, Delaware, Georgia, Idaho, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Texas, Utah, Virginia, West Virginia, Wisconsin, and Wyoming.

⁴⁶ Same as note 45, except Connecticut, New Jersey, Rhode Island, and South Dakota.

⁴⁷ California, Colorado, Delaware, Georgia, Idaho, Iowa, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Nevada, New Mexico, North Carolina, Ohio, Oklahoma, Oregon, Texas, Utah, Virginia, West Virginia, Wisconsin, and Wyoming.

⁴⁸ California, Colorado, Delaware, Georgia, Idaho, Iowa, Louisiana, Maryland, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Ohio, Oklahoma, Oregon, Texas, Utah, Virginia, West Virginia, Wisconsin, and Wyoming.

⁴⁹ Connecticut, Kentucky, Massachusetts, Missouri, New Jersey, Pennsylvania, Rhode Island, South Carolina, and South Dakota.

⁵⁰ California, Colorado, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Washington, Wisconsin, and Wyoming.

covered, altered, or destroyed. In six more States⁵¹ it is unlawful to receive or dispose of a vehicle in such condition, while in five other States⁵² it is forbidden only to possess such a vehicle. Thus all but four States⁵³ have some statutory provision concerning the ownership of motor vehicles without identifying marks. In 29 of these States⁵⁴ it is an essential element of the crime that the owner intends to conceal or misrepresent the identity of the vehicle, while in the remaining States the mere possession of such a vehicle is all that is required, without regard to the intent.

ALTERING IDENTIFICATION MARKS

Forty-one States⁵⁵ make it an offense to alter, destroy, deface, or remove the manufacturer's serial number or other identifying mark from a motor vehicle, or to stamp new numbers upon any such vehicle. In 37 of these States⁵⁶ the law specifically declares that such alteration must be made with fraudulent intent to constitute a crime. It is specifically provided in 39 States⁵⁷ that the owner may restore a previously obliterated identifying mark, after obtaining the consent of the State administrative agency, and that manufacturers of motor vehicles and their component parts may place identifying marks upon them in the usual course of business.

DISMANTLING

Four States⁵⁸ require that a permit be obtained from the administrative agency before a motor vehicle can be dismantled. A permit to transport a motor vehicle to be dismantled, junked, or wrecked, is required in four States.⁵⁹

Issuance of a certificate of title or certificate of ownership for a motor vehicle that has been dismantled, junked, or wrecked, is specifically forbidden in eight States.⁶⁰

When a motor vehicle is dismantled, junked, wrecked, or disposed of, for any of said purposes, all registration certificates and plates and the certificates of title or ownership, in States that require them, must be surrendered and returned to the administrative agency in 22 States.⁶¹

REISSUE OF LOST OR MUTILATED PLATES AND OFFICIAL DOCUMENTS

Provisions exist in the statutes of all States for the issuance of duplicates of official documents or registration plates for motor vehicles, in the event of loss, destruction, or mutilation which renders

⁵¹ Delaware, Michigan, Montana, North Dakota, Tennessee, and West Virginia.

⁵² Arkansas, Connecticut, Idaho, Vermont, and Virginia.

⁵³ Alabama, Arizona, Oklahoma, and the District of Columbia.

⁵⁴ Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Iowa, Maine, Mississippi, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Washington, Wisconsin, and Wyoming.

⁵⁵ All States except Arkansas, Florida, Georgia, Maine, Oregon, South Carolina, Tennessee, and the District of Columbia.

⁵⁶ Same as note 55, with the exception of Indiana, Maryland, Mississippi, and Missouri.

⁵⁷ Same as note 55, with the exception of Alabama and Mississippi.

⁵⁸ Illinois, Massachusetts, Oregon, and Pennsylvania.

⁵⁹ Colorado, Illinois, Massachusetts, and Pennsylvania.

⁶⁰ California, Illinois, Indiana, Michigan, Oregon, Pennsylvania, Utah, and Wisconsin.

⁶¹ California, Connecticut, Illinois, Indiana, Iowa, Kentucky, Maine, Michigan, Minnesota, Mississippi, Missouri, Nevada, New Jersey, New Mexico, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, and Wisconsin.

them illegible. In similar circumstances substitute numbers, rather than duplicates, may be issued in nine States.⁶²

Reregistration or relicensing upon expiration is provided for by statute in all States, generally upon presentation of expiring documents without formal reapplication.

Notice must be given to the administrative agency when address is changed, by persons holding such documents or plates, in 15 States;⁶³ and when name is changed by marriage or otherwise, in 11 States.⁶⁴

STATE HIGHWAY PATROLS

Organizations within the State government for the enforcement of laws upon the highways exist in all but four States.⁶⁵ The effectiveness of such organizations as highway police, however, varies widely. In some States there are highway patrols consisting of a small force concerned primarily with the collection of revenue, or of an inadequate number of men to police the area under their jurisdiction. Such agencies necessarily have but little effect in the promotion of highway safety.

The strength of the various State highway patrols may be indicated roughly by their size, which varies from 6 in one State to over 800 in another, as shown by the following summary:

Number of States:	Size of force
1-----	Over 800
1-----	650-700
1-----	500-550
2-----	300-350
3-----	200-299
4-----	150-199
7-----	100-149
11-----	50-99
12-----	11-49
3-----	10 or less

Another rough index of the strength of highway patrols is the amount of money devoted to them, as shown by the following tabulation:

Number of States:	Approximate annual expenditure on highway police
2-----	Over \$2, 000, 000
2-----	\$1, 000, 000- 2, 000, 000
2-----	900, 000- 1, 000, 000
4-----	400, 000- 500, 000
4-----	300, 000- 400, 000
6-----	200, 000- 300, 000
12-----	100, 000- 200, 000
5-----	50, 000- 100, 000
5-----	Less than 50, 000
3-----	Figures not available

The administration of the highway patrol is vested in a State police force in 14 States⁶⁶ and in a department of safety in 5

⁶² Arizona, California, Connecticut, Maine, Minnesota, Missouri, New Hampshire, New Jersey, and Pennsylvania.

⁶³ Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Indiana, Kansas, Michigan, New Jersey, New Mexico, North Dakota, South Carolina, Utah, and the District of Columbia.

⁶⁴ Arkansas, Colorado, Idaho, Indiana, Kansas, Michigan, New Mexico, North Dakota, Oregon, South Carolina, and Utah.

⁶⁵ Kentucky, Mississippi, Nebraska, and the District of Columbia. (See individual State summaries which follow.)

⁶⁶ Arkansas, Connecticut, Idaho, Indiana, Louisiana, Maine, Maryland, Michigan, Nevada, New Jersey, New Mexico, New York, Oregon, and Rhode Island.

States.⁶⁷ An independent highway patrol exists in 4 States,⁶⁸ while in 12 States⁶⁹ such a patrol is under the highway department, in 5 States⁷⁰ it is under the department of motor vehicles, and in 5 more States⁷¹ it is under the department of revenue.

The chief of the highway patrol is usually appointed by the administrative head of the organization of which it is part, or by the Governor. The salary of the patrol chief is fixed by statute in 20 States. In 20 States he must give bond, the amount of which is fixed by statute in 13 States at sums varying from \$5,000 to \$100,000.

Appointment to the patrol is on a probationary basis for 6 months or a year in 10 States,⁷² and provision is made in 12 States⁷³ for the establishment of a training school for newly appointed members of the force.

More or less complete civil service systems were noted in the patrol organizations of 24 States.⁷⁴ Among the most generally found provisions were requirements that appointees must be chosen from candidates qualified by examination, and that discharge can be only after a hearing at which written charges are preferred and proved.

Patrolmen are required by statute to give bond in 17 States;⁷⁵ are forbidden to take part in politics, in 7 States;⁷⁶ and are required to be in uniform when on duty in 9 States.⁷⁷ In three other States⁷⁸ uniforms may be dispensed with only by order of the chief administrative officer. It is a misdemeanor to impersonate an officer in 12 States;⁷⁹ or to wear a similar uniform or badge in 13 States.⁸⁰

The duties of highway patrolmen vary widely. In 37 States⁸¹ they are directed in general terms to enforce all motor vehicle laws of the State. Nineteen States⁸² explicitly require them to enforce the traffic laws, 17 States⁸³ require them to enforce the drivers' license laws, 8 States⁸⁴ authorize them to weigh commercial vehicles, 12 States⁸⁵ require enforcement of registration laws, while a few

⁶⁷ Georgia, Massachusetts, Oklahoma, Texas, and West Virginia.

⁶⁸ Alabama, Colorado, Missouri, and Washington.

⁶⁹ Arizona, Delaware, Illinois, Kansas, Minnesota, Montana, North Dakota, Ohio, South Carolina, South Dakota, Utah, and Wyoming.

⁷⁰ California, Florida, Iowa, New Hampshire, and Vermont.

⁷¹ North Carolina, Pennsylvania, Tennessee, Virginia, and Wisconsin.

⁷² Georgia, Indiana, Iowa, Louisiana, Maine, Maryland, Missouri, Montana, Oklahoma, and South Dakota.

⁷³ Arizona, Arkansas, California, Georgia, Indiana, Iowa, Louisiana, Maryland, Massachusetts, New Mexico, Oklahoma, and South Dakota.

⁷⁴ Arkansas, California, Connecticut, Georgia, Indiana, Iowa, Louisiana, Maine, Maryland, Michigan, Missouri, Montana, New Jersey, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Dakota, Texas, Virginia, and West Virginia.

⁷⁵ Alabama, Arkansas, Connecticut, Illinois, Iowa, Maine, Minnesota, Missouri, Nevada, North Carolina, North Dakota, Ohio, South Carolina, South Dakota, Tennessee, Virginia, and West Virginia.

⁷⁶ Colorado, Iowa, Michigan, Missouri, Oklahoma, Texas, and West Virginia.

⁷⁷ Colorado, Indiana, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, and Virginia.

⁷⁸ Connecticut, Oregon, and South Dakota.

⁷⁹ Arizona, California, Colorado, Iowa, Maine, Nevada, New Jersey, North Dakota, Ohio, Oklahoma, Rhode Island, and West Virginia.

⁸⁰ Arizona, California, Colorado, Delaware, Iowa, Maine, Massachusetts, New Jersey, North Dakota, Ohio, Oklahoma, Rhode Island, and West Virginia.

⁸¹ Arizona, Arkansas, California, Colorado, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming.

⁸² Arizona, California, Colorado, Delaware, Florida, Illinois, Indiana, Louisiana, Michigan, Missouri, Montana, New York, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Vermont, and Wisconsin.

⁸³ Alabama, Arkansas, Colorado, Georgia, Idaho, Illinois, Maine, New Hampshire, New Mexico, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Carolina, Utah, Virginia, and Wisconsin.

⁸⁴ Arkansas, Delaware, Georgia, Illinois, Missouri, Ohio, Oklahoma, and Wisconsin.

⁸⁵ Idaho, Illinois, Maine, Missouri, New Mexico, North Dakota, Ohio, Oklahoma, Pennsylvania, Utah, Virginia, and Wisconsin.

States require the investigation of accidents and thefts, the inspection of vehicles in garages and of highways, and the apprehension of parties causing injuries to the highways or their appurtenances. In 22 States,⁸⁶ the patrol is apparently directed to devote its efforts solely or primarily to the enforcement of motor vehicle laws.

The powers granted highway patrols vary no less widely than their duties. In 27 States⁸⁷ members of the highway patrol have all the police power that local officials have in their respective jurisdictions. In 11 other States⁸⁸ police powers are granted only to enforce the motor-vehicle laws. Various other limitations are placed on the powers of the patrols in the 7 remaining States⁸⁹ that have them. Patrolmen are specifically authorized to arrest without warrant any person violating any law of the State in their presence, in 26 States;⁹⁰ and to serve criminal process, in 21 States.⁹¹

They are game wardens in 7 States⁹² and fire marshals in 6 States,⁹³ liquor-law inspectors in 3⁹⁴ and must enforce motor fuel tax laws in 10 States.⁹⁵ In 14 States⁹⁶ the highway patrol is subject to the call of the Governor for emergency service. In 7 States⁹⁷ highway patrols are prohibited from acting in labor disputes or strikes, in 6⁹⁸ they may act only when so ordered by the Governor, and in 2⁹⁹ they are directed to enforce the law in such disputes.

While the above powers and duties are specifically imposed on the highway patrols, in many States where they have general police powers other miscellaneous duties are imposed upon them.

Due to the wide variation in the organization, powers, and duties of the agencies charged with patrolling the highways, it is believed that a better understanding of them will result from a brief summary of the provisions in force in each State. Such summary follows:

Alabama.—There is in Alabama a State highway patrol of seven officers and such number of patrolmen as the Governor deems necessary. The patrol is an independent agency, directly responsible to the Governor, who appoints and removes its members.

⁸⁶ Arizona, California, Colorado, Florida, Iowa, Kansas, Minnesota, Missouri, Montana, New Hampshire, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, Utah, Vermont, Virginia, Washington, and Wyoming.

This point is difficult to evaluate exactly. A more detailed description of the duties of each highway patrol appears in the individual State summaries which follow.

⁸⁷ Alabama, Arkansas, Connecticut, Delaware, Idaho, Illinois, Indiana, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Nevada, New Jersey, New Mexico, New York, Oregon, Rhode Island, South Carolina, South Dakota, Texas, Utah, Virginia, Washington, West Virginia, and Wyoming.

⁸⁸ Arizona, Colorado, Florida, Missouri, New Hampshire, North Dakota, Ohio, Oklahoma, Pennsylvania, Vermont, and Wisconsin.

⁸⁹ California, Georgia, Iowa, Minnesota, Montana, North Carolina, and Tennessee.

⁹⁰ Arkansas, California, Illinois, Indiana, Iowa, Maine, Maryland, Michigan, Montana, Nevada, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, and West Virginia.

⁹¹ California, Illinois, Indiana, Louisiana, Maine, Maryland, Massachusetts, Michigan, Nevada, New Hampshire, New Jersey, New York, North Carolina, Oklahoma, Rhode Island, South Carolina, South Dakota, Texas, Utah, West Virginia, and Wyoming.

⁹² Louisiana, Maryland, Massachusetts, New Jersey, New York, Oregon, and West Virginia.

⁹³ Arkansas, Connecticut, Indiana, Massachusetts, Oregon, and West Virginia.

⁹⁴ Oregon, Utah, and West Virginia.

⁹⁵ Arizona, Arkansas, Colorado, Missouri, New Mexico, Ohio, Oklahoma, Tennessee, Virginia, and Wisconsin.

⁹⁶ Alabama, Connecticut, Maine, Massachusetts, Nevada, New Jersey, New Mexico, New York, North Carolina, Oregon, Rhode Island, Texas, Utah, and Wyoming.

⁹⁷ Arizona, Arkansas, Colorado, Georgia, Minnesota, Montana, and Ohio.

⁹⁸ Indiana, Louisiana, Massachusetts, New Jersey, New York, and Rhode Island.

⁹⁹ Oregon and West Virginia.

Members of the patrol have all the powers of peace officers and must enforce the driver's license law, promote public safety, and perform any duties required of them by the Governor in connection with the enforcement of any law.

Arizona.—The Arizona highway patrol is a division of the State highway department and consists of a superintendent and not over 1 patrolman for each 8,000 motor vehicles registered in the State. The State highway engineer fixes the salary of members of the patrol and appoints the superintendent, who in turn appoints the patrolmen.

The patrol is vested with the authority of peace officers to enforce laws relating to the use of the highway or the operation of motor vehicles thereon, and is required to patrol the highways day and night, to enforce the laws relating to them, and to investigate accidents. The patrol shall never be used in connection with strikes or labor disputes.

Arkansas.—The Arkansas State police is an independent department of the government, under the control of the Arkansas State police commission, which is appointed by the Governor with the consent of the Senate. The commission appoints a superintendent, who appoints as many patrolmen as the commission deems necessary.

The State police are conservators of the peace, and have the powers of local peace officers and fire marshals. They must cooperate with local officials to enforce all laws and apprehend criminals, patrol the highways, enforce the laws relating to vehicles and the use of the highways, collect delinquent motor-vehicle and gasoline taxes, determine the causes of injuries on the highways, and weigh commercial vehicles, but shall never be used in connection with labor disputes.

California.—The California highway patrol is a part of the department of motor vehicles, the director of which appoints a chief of the patrol, who in turn appoints subordinates and traffic officers from lists of eligibles submitted by the county boards of supervisors.

Members of the patrol have the powers of peace officers, but their primary duty is to enforce the provisions of the highway code. They shall not act as peace officers in enforcing other than highway laws except when in pursuit of an offender or suspect, or to make arrest for crimes committed on the highways. Among the duties allocated to the patrol are the direction of traffic, the inspection of vehicles and equipment, the inspection of garages, the investigation of accidents, and the service of relevant warrants.

Colorado.—The State highway-courtesy patrol is an independent agency under control of a board which appoints a supervisor and 73 patrolmen.

Members of the patrol are given the authority of peace officers to enforce the motor-vehicle laws and other laws relating to the operation of motor vehicles on, or the use of, the highways; and are required to enforce all laws pertaining to vehicles and their operators, and all fuel-tax laws. They may stop vehicles and inspect equipment and documents, inspect garages, investigate traffic accidents and automobile thefts, and check livestock-transportation permits. However, no patrolman can be deputized as a peace officer by local or State authority, nor serve on strike duty.

Connecticut.—The State police force is under the direction of a commissioner who is appointed by the Governor for a 4-year term.

The commissioner appoints a force of 200 men, of whom 75 are assigned to highway-patrol duty exclusively.

The State police have the same powers with respect to criminals and law enforcement as sheriffs, and are authorized to protect property and to investigate and prosecute any law violation except in municipalities having a local court. The duties of the force include the inspection of amusement parks, fuel-oil burners, motion-picture establishments, weights and measurements, the prevention of fuel profiteering, and the duties of fire marshals. On order of the Governor they may be required to suppress rioting or civil commotion.

Delaware.—The State highway department appoints an unspecified number of traffic officers, called State police.

These officers are conservators of the peace throughout the State, have the police powers of local peace officers, and are authorized to suppress all acts of violence and enforce all laws relating to the safety of persons and property. Their primary duty is the enforcement of all laws relating to the operation of vehicles on the public highways.

The Governor is also authorized to appoint a motor-vehicle inspector in each county. Such inspectors are supervised by the vehicle commission and are authorized to enforce the motor-vehicle laws.

Florida.—The Governor is authorized to appoint, on the recommendation of the motor-vehicle commissioner, eight license inspectors who operate under the control of the commissioner.

These inspectors have police power and authority only to enforce the motor-vehicle laws. The principal reliance to secure obedience to motor-vehicle laws is placed in county traffic officers.

Georgia.—There is in Georgia a newly established (1937) department of public safety, of which one division is the Georgia State patrol. The patrol comprises about 16 officers and 80 men appointed and supervised by a commissioner of public safety, who is responsible to a departmental board.

Members of the patrol are empowered to prevent, detect, and investigate criminal acts, apprehend criminals, and safeguard lives and property. Their primary duty is to patrol the rural public roads. They are required to cooperate with local police, but may exercise the power of arrest only for offenses against the motor-vehicle law or other offenses committed on the highways. They must enforce the driver's license law and check truck weights, but are forbidden to act in labor disputes.

Idaho.—The Idaho highway patrol is a part of the department of law enforcement. The Governor determines the number and pay of its members, who are appointed by the commissioner of law enforcement.

The deputies of the department have power to enforce all the penal and regulatory laws of the State, to preserve order, and to exercise the powers of local peace officers. They are required to license drivers and register motor vehicles, and may require the aid of local authorities when necessary.

Illinois.—The director of the department of public works and buildings may appoint not over 350 State highway maintenance police from applicants who pass an examination.

These policemen are conservators of the peace and have the powers of local peace officers. They must cooperate with local officials to enforce all the laws of the State. The special duties of such police-

men are to patrol the highways in rural districts, to enforce motor-vehicle laws, to collect license fees, to weigh commercial vehicles, to inspect the highways weekly, and to arrest persons causing damage to the highways and their appurtenances.

Indiana.—The Executive Department of the State of Indiana includes a department of State police administered by a board and superintendent appointed by the Governor. The superintendent employs an unnamed number of police at salaries fixed by the board.

The State police have the powers of peace officers. They must prevent crime, apprehend criminals, arrest for breaches of the peace in their presence, and investigate and report on motor-vehicle accidents. They are fire marshals, may serve process, and are specifically required to enforce the laws regulating the use of automobiles and safeguarding the highways. The police, however, can act within cities in labor disputes only by direction of the Governor.

Iowa.—The division of highway safety and patrol is a part of the motor vehicle department. The commissioner of motor vehicles appoints members of the patrol at salaries set by the legislature.

Members of the patrol must enforce the provisions of the motor-vehicle laws regarding regulation of motor vehicles and the laws of the road. They also have power to arrest without warrant a person violating any law in their presence.

Kansas.—The State highway commission, through the director of highways, may appoint not over 20 motor-vehicle inspectors. These inspectors have the authority of peace officers and enforce the motor-vehicle laws only.

Chief reliance in enforcing these laws is placed in the deputy sheriffs of each county, who are expressly charged with securing obedience to motor-vehicle laws.

Unofficial information indicates that the 1937 Kansas Legislature reorganized the highway-commission inspectors into a State highway patrol and expanded their functions.

Kentucky.—The State highway commission and the State tax commission are authorized to appoint their employees as highway patrolmen, and when so appointed, such employees have the powers of peace officers to enforce the motor-vehicle laws.

Statutory authority to establish a division of highway patrol in the department of highways exists, but apparently has not been exercised; and the county sheriffs and their deputies are relied upon to enforce the motor-vehicle laws.

Louisiana.—The department of State police is headed by a superintendent appointed by the Governor. Members of the force are appointed and their salaries set by the superintendent.

They are peace officers and have all the powers of sheriffs with respect to criminal matters and law enforcement. They must apprehend criminals, enforce the criminal and traffic laws of the State, and act as game wardens. The police employees of the department shall be the highway patrol of the State and as such shall perform only "real police duties." They may act in industrial disputes in municipalities only when actual violence has occurred and then upon order of the Governor.

Maine.—The Governor appoints a chief of the State police, who in turn appoints members of the force for 3-year terms. The salaries of the chief and of the patrolmen are fixed by the Governor.

The State police have the same powers as sheriffs. They may arrest on view, serve process, investigate and prosecute law violators, and are required to cooperate with local officials to prevent crime. The police must patrol the State highways outside cities to enforce the motor-vehicle laws generally, and in particular must compel the registering of vehicles, the licensing of operators, and the reporting of accidents. They are subject to the call of the Governor for emergency purposes.

Maryland.—The Department of Maryland State Police is headed by a superintendent appointed by the Governor for a 4-year term. The superintendent appoints 38 officers and 47 policemen from civil-service lists.

The State police are peace officers with the same powers as local sheriffs. It is their duty to prevent crime, enforce the criminal and motor-vehicle laws, and cooperate with local officials. They must also enforce the game, fish, oyster, and forest-conservation laws. State policemen are explicitly required to carry out all the laws relating to motor vehicles, including registration of vehicles and licensing of operators. The general law-enforcement powers of these officers may be exercised within a municipality only on request of the governing officer of such municipality or the Governor, and shall never be exercised in four counties of the State.

Massachusetts.—The department of public safety is administered by a commissioner who personally heads a division of State police within the department, appointing and removing its members.

All officers and inspectors of the department of public safety have the powers of constables and police officers. The department is charged with enforcing the boiler laws, fire laws, fish and game laws; maintenance of order in prisons; prevention of cruelty to children and animals; care of drug addicts; and inspection of firearms; in addition to a general command to enforce all the laws of the State; and to direct inspections. Special officers are used for many of these inspectional functions, but they have general police powers. The enforcement of motor-vehicle laws, including registration of vehicles, licensing of operators, and investigation of accidents, is a special duty of the uniformed State police. The Governor may command the service of policemen in quelling disputes, but only after actual violence has occurred.

Michigan.—A commissioner appointed by the Governor heads the Michigan State police and appoints the members of the force at salaries which he prescribes.

Members of the police are conservators of the peace and may serve process when directed by the Governor. They may require the aid of, and must cooperate with, local officers. Policemen may arrest without warrant for any law violations committed in their presence, including laws for the protection of the public and those regulating the use of the highways. It is the special duty of the police to prevent traffic crimes.

Minnesota.—The commissioner of highways may employ, at salaries fixed by statute, not over 100 persons to enforce the laws relating to the protection and use of trunk highways.

These officers have, on trunk highways only, the same powers with respect to enforcement of criminal laws as local peace officers insofar as is necessary for the protection of life and property upon the high-

ways. To effectuate this authority, law violators found on the trunk highways may be pursued and apprehended elsewhere. Such officers must cooperate with local officials, but can never be used in industrial disputes.

Mississippi.—The auditor of public accounts is authorized to employ five patrolmen to enforce the laws relating to the payment of license taxes by commercial vehicles. This is not a highway patrol in the true sense, however.

Reliance is placed upon county patrolmen to enforce the traffic laws.

Missouri.—The Governor appoints a superintendent of the Missouri State highway patrol who in turn appoints 10 officers and not over 115 patrolmen.

Members of the patrol have full peace powers and may arrest without warrant for the violation of any law. Special duties of the patrol are to police the State highways, to regulate traffic thereon, to weigh commercial vehicles, to determine and arrest persons damaging the highways, and to cooperate with the motor-vehicle commission in the collection of registration and license fees and with the inspector of oils in the collection of fuel taxes.

Montana.—A highway patrol board is in charge of the Montana highway patrol and appoints a supervisor and as many patrolmen at statutorily fixed salaries as the annual appropriation permits.

Patrolmen may arrest for any traffic violation committed in their presence but shall not otherwise be deemed peace officers. The special duty of the patrol is to make arrests for 22 specified offenses against the motor-vehicle laws, and for certain other enumerated crimes committed in their presence. They may investigate traffic accidents and examine and recommend forfeiture of the license of persons who frequently violate the motor-vehicle laws.

Nebraska.—No provision for the enforcement of motor-vehicle laws other than by local peace officers was noted in the statutes of this State.

Nevada.—A State police force exists under a superintendent appointed by the Governor. The superintendent may appoint 5 officers, 25 policemen, and not over 250 reserves.

The State police may arrest without warrant any person charged with violating any law of the State, may serve criminal process, and in general perform the duties of peace officers. The members of this force have sufficiently broad powers to enable them to enforce motor-vehicle laws, but this duty is not specifically imposed upon them. The police must suppress riots and arrest persons engaged therein.

New Hampshire.—The commissioner of motor vehicles, appointed by the Governor, may employ an unspecified number of suitable persons as examiners.

Such examiners have power to enforce all laws, rules, and regulations, relating to motor vehicles, and make arrests for violations thereof. To this end they may arrest without warrant, serve criminal process, and require aid from local officials when necessary.

New Jersey.—Enforcement of motor-vehicle laws is primarily in the hands of the State police under a superintendent, appointed by the Governor for a 5-year term. The superintendent appoints a force of approximately 100 officers and 180 troopers for 2-year terms.

The police are peace officers and are authorized to prevent crime, execute warrants, arrest without warrant for law violations in their

presence, and are primarily concerned with protecting inhabitants of rural areas. Policemen are forest, fish, and game wardens, and are subject to the call of the Governor for emergency service. They are specifically charged with enforcement of the motor-vehicle laws.

The commissioner of motor vehicles appoints a force of inspectors who have charge of registration and licensing laws, and incidentally enforce the traffic laws.

New Mexico.—The Governor appoints a board of supervisors and a chief policeman of the New Mexico State police. The board employs not over 30 patrolmen from civil-service lists.

These patrolmen are conservators of the peace with full powers to apprehend all law violators. They are charged with the enforcement of all laws of the State relating to the use of the highway, including registration and license laws, regulation of "for hire" vehicles, and the collection of fuel taxes. The Governor may detail the entire force to any part of the State to handle disturbances.

While this organization is called a State police, its size and duties indicate that it operates primarily as a highway patrol.

New York.—The executive department contains a division of State police headed by a superintendent appointed by the Governor. The superintendent appoints a force of about 230 officers and 450 privates.

The State police must prevent and detect crime and in general exercise the powers of peace officers. They are fish and game wardens, and are specifically charged with the duty to investigate and make arrests for violations of the traffic laws and motor-vehicle thefts. The Governor may call upon the police for emergency service, but they may act to suppress rioting within a municipality only upon his express orders.

The law also provides for the appointment of inspectors, with limited police powers, by the motor-vehicle commissioner. Such inspectors are chiefly concerned with registration and licensing laws, rather than traffic on the highways, and not a highway-patrol force.

North Carolina.—The commissioner of revenue appoints and fixes the compensation of a captain and 120 patrolmen who constitute the division of highway safety of the department of revenue.

Members of the patrol have the powers of peace officers only to enforce the laws relating to motor vehicles on the highways. They must regularly police the State highway system, enforce the driver's license laws in conjunction with local officials, and act as inspectors of weights and measures. When directed by the Governor or requested by local officials, members of the patrol may exercise general police powers and may arrest persons accused of any criminal offense.

North Dakota.—The highway commissioner appoints a State highway-patrol superintendent, who in turn appoints not over 10 highway police. Salaries are fixed by statute.

Members of the patrol are invested with all the powers of peace officers and are required to enforce the laws relating to the protection of the highways and the operation of vehicles thereon. They are required to arrest any person violating a motor-vehicle law in their presence and must direct traffic, examine registration and licensing documents, inspect garages, and investigate traffic accidents and motor-vehicle thefts.

While the patrolmen have full police powers, their specific duties effectively limit their activities to those of a highway police force.

Ohio.—The department of highways includes a division of State highway patrol under the direction of a superintendent, appointed by the director of highways. The superintendent may employ not over 200 patrolmen and 30 radio operators at salaries fixed by the director of highways.

Members of the patrol are vested with the authority of peace officers to enforce the State laws relating to the registration of motor vehicles, their operation, and the protection of the highways. They must require commercial vehicles to obey the laws, investigate fuel-tax violations and accidents, and arrest parties damaging the highways or their appurtenances. The powers of patrolmen are not general and are expressly declared to be supplementary to those of local peace officers.

Oklahoma.—The department of public safety includes a division of highway patrol. The commissioner of public safety appoints a chief, 12 officers, and not over 125 patrolmen at statutorily determined salaries.

Patrolmen are constituted peace officers to enforce the laws relating to the use of the highways and the operation of motor vehicles thereon, and other laws by direction of the Governor, or when offenses are committed in their presence. They are required to direct traffic, to inspect vehicles and garages, to investigate traffic accidents, fuel tax law violations, and motor-vehicle thefts, and to enforce the laws relating to registration of vehicles, licensing of operators, and the protection of the highways and structures thereon.

Oregon.—The department of state police is headed by a superintendent appointed by the Governor, who in turn appoints for 2-year terms such number of officers and privates as the Governor deems necessary, at salaries fixed by statute.

These Oregon State police have all the powers of local peace officers and must enforce all criminal laws. They are game wardens, fish wardens, fire marshals, and liquor law deputies. They are explicitly required to enforce the motor-vehicle laws and only the proportion of their time so spent may be charged to the highway fund. Policemen are subject to the call of the Governor for emergency service and may serve in labor disputes.

Pennsylvania.—There is a dual rural law enforcement system in this State. The State police have broad powers as peace officers and must enforce all laws in rural areas. However, the enforcement of motor-vehicle laws is vested primarily in the State highway patrol, a part of the department of revenue. The secretary of revenue appoints, fixes the salaries, and determines the number of employees of this patrol. Its members are given authority and police power, when in uniform, to arrest without warrant any person violating any provision of the vehicle code (changed by 1937 legislation; details not available).

Rhode Island.—The executive department includes a division of State police, headed by a superintendent appointed by the Governor. The superintendent may employ such number of patrolmen as he deems necessary, at salaries fixed by him within statutory limits.

State policemen have all the powers of local peace officers in enforcing all criminal laws. They must prevent and detect crime and assist in apprehending criminals. The Governor may call upon them to suppress riots, but they may do so within municipalities

only upon his order. No specific direction to enforce the motor-vehicle laws was noted, but apparently this is done as a part of their general police duty.

South Carolina.—The highway department may employ such agents as it deems necessary to carry out the motor-vehicle laws, and organize them as the South Carolina highway patrol.

Patrolmen are State constables and have the right to arrest persons committing any criminal offense in their presence. They are directed to enforce the driver's license laws and traffic laws and in so doing are required to remain on the highways at all times except when in pursuit of offenders who could not be apprehended thereon.

South Dakota.—The department of motor patrol is a part of the State highway commission, which appoints a superintendent, who appoints and determines the salaries of such full-time agents as he deems necessary.

These agents have full police powers, are directed to prevent and detect crime, apprehend criminals, enforce all the traffic and criminal laws of the State, and perform other related duties at the direction of the legislature. They must enforce all laws relating to the regulation of motor vehicles, traffic, the use of the highways, and the operation of vehicles thereon.

Tennessee.—The commissioner of finance and taxation appoints a Tennessee highway patrol consisting of a chief and not more than one patrolman for each 50 miles of the State highway system. Salaries are determined by the commissioner.

The patrol must police the State highways and enforce all laws and regulations relating to the operation of motor vehicles and the use of the highways. Members of the patrol must also assist the commissioner of finance and taxation to collect all taxes and revenue accruing to the State.

Apparently, members of this patrol have no general police powers. These are vested in a Tennessee State Police, which does not appear to be engaged in patrolling the highways.

Texas.—The department of public safety is supervised by a three-man public safety commission which appoints the director of public safety, who is in direct charge of the department. The department includes the Texas Rangers, a State police force with broad powers and general jurisdiction, and the Texas highway patrol, charged particularly with enforcement of the motor-vehicle laws. The director appoints a chief of the patrol, not over 45 officers, and not over 300 privates at salaries fixed by the legislature.

Members of the highway patrol are clothed with all the general police powers of the Texas Rangers in addition to their specific authority to enforce the laws regulating the operation of motor vehicles and the use of the highways. The Governor may direct the activities of the patrol as he sees fit in the event of public disasters or riots.

Utah.—The State road commission is in charge of the State highway patrol, and may appoint and fix the salaries of as many persons as it deems necessary adequately to police the State highways.

These patrols have general police powers and may arrest violators of any State law.

Their particular functions, however, are to enforce the laws relating to the use of the highways, the licensing of operators, the registration of vehicles, and their operation. The Governor may call upon

the patrol for emergency service, and it may be required to aid in enforcing the liquor laws.

Vermont.—The commissioner of motor vehicles may appoint not over 37 inspectors.

These inspectors enforce all statutes, rules, and regulations pertaining to motor vehicles and the display of lights thereon, and to this end only may arrest violators of such laws. They also inspect garages and investigate accidents.

Virginia.—Enforcement of motor vehicle laws is in the division of motor vehicles of the department of finance. The director of the division of motor vehicles is appointed by the Governor, and in turn may appoint bonded inspectors to patrol the highways.

These inspectors have the powers of sheriffs and may enforce all the criminal laws of the State. They are particularly required to enforce the license and registration laws, the gasoline tax laws, and the traffic laws. They may inspect vehicles and equipment on the road or in garages.

Washington.—The Governor appoints the chief of the Washington State Patrol, an independent agency of the State government, and the chief employs and fixes the salaries of a sufficient number of patrol officers.

These patrolmen have the police powers and duties of sheriffs and peace officers generally, and are particularly directed to control traffic throughout the State.

West Virginia.—The department of public safety is a State police force headed by a superintendent appointed by the Governor for a 4-year term. The superintendent appoints 64 officers and from 120 to 220 privates at statutorily fixed salaries for 2-year terms.

These policemen have all the powers of sheriffs except in matters of a civil nature. They are forest patrolmen, game and fish wardens, and deputy prohibition officers, and must cooperate with local officials in detecting crime. They must see that the law is enforced during labor disputes, but shall aid neither party to such dispute. They are not specifically required to enforce motor-vehicle laws, but apparently do so under their general powers.

Wisconsin.—The State treasury department includes a State inspection bureau under a supervisor of inspectors, appointed by the Governor for a 4-year term.

This bureau is specifically charged with the enforcement of all provisions of the vehicle code regulating highway traffic. Its inspectors may weigh vehicles, investigate violations of the registration laws, and inspect garages. In the discharge of their duties these inspectors have the powers of sheriffs.

Wyoming.—The State highway superintendent appoints and fixes the salaries of a State highway patrol, comprising a captain and a sufficient number of patrolmen.

The patrol enforces the motor vehicle laws, performs other duties which may be assigned, and is subject to the call of the Governor in emergencies. Members of the patrol, while actually engaged in performing their duties, have and may exercise all the powers of peace officers except the service of civil process.

District of Columbia.—The Metropolitan Police includes a traffic division charged with the duty of enforcing motor vehicle laws.

However, the peculiar status of the District of Columbia makes this organization more closely akin to a local police force than a State highway patrol, hence no discussion of its powers will be included herein.

LAWS RELATING TO THE LICENSING OF OPERATORS OF MOTOR VEHICLES

In 41 States no person, unless specifically exempted by law, may drive any motor vehicle upon a highway unless such person has a valid license as an operator or chauffeur. There are eight States¹ that have not enacted laws requiring that all motor vehicle drivers be licensed.

PERSONS EXEMPT FROM OBTAINING OPERATORS' LICENSES

The following classes of persons are specifically exempted from the obligation of obtaining drivers' licenses:

1. Any person operating a motor vehicle in the service of the Army, Navy, or Marine Corps, of the United States, is exempt in 27 States.²

2. Any person in the service of the Federal Government, when furnished by the employing agency with a driver's permit and when operating an official motor vehicle in such service, is exempt in three States.³

3. Persons operating road machines, farm tractors, or implements of husbandry, temporarily moved upon a highway, are exempt in 29 States.⁴

4. Exemptions are made in favor of members of the National Guard of any State while in the State of Washington, members of the Pennsylvania National Guard in the State of Pennsylvania, and foreign diplomats and New Hampshire State officials in New Hampshire.

5. A nonresident who has in his immediate possession a valid operator's license issued by his home State is exempt in 18 States⁵ if he is 16 years of age, in Indiana and New York if he is 18 years old, in Iowa and Oregon if he is 15 years old, in Michigan if he is 14 years old, in California if he is 21 years old. Sixteen States⁶ require only that a nonresident shall have complied with the laws of his home State relating to the issuance of drivers' licenses.

The period of time during which such nonresident may operate is limited to the reciprocity period in 12 States,⁷ to 90 days in South Carolina and West Virginia, to 60 days in Indiana, and to 30 days in Nebraska and Ohio.

¹ Florida, Illinois, Louisiana, Mississippi, Missouri, Oklahoma, South Dakota, and Wyoming.

² Arizona, Arkansas, California, Colorado, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, North Carolina, North Dakota, Ohio, Oregon, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

³ Alabama, Pennsylvania, and Texas.

⁴ Arizona, Arkansas, California, Colorado, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Mexico, North Carolina, North Dakota, Ohio, Oregon, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, and Wisconsin.

⁵ Arizona, Arkansas, Colorado, Connecticut, Delaware, Georgia, Idaho, Kansas, Kentucky, Maryland, Nevada, New Mexico, North Carolina, Tennessee, Texas, Utah, Virginia, and Washington.

⁶ Alabama, Maine, Massachusetts, Minnesota, Nebraska, New Hampshire, New Jersey, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, Vermont, West Virginia, Wisconsin, and the District of Columbia.

⁷ Alabama, Connecticut, Kentucky, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and the District of Columbia.

Massachusetts provides that the exemption will apply only to nonresident operators from States requiring standards of fitness for drivers substantially as high as its own.

In Connecticut nonresident operators less than 18 years old must comply with the provisions of the insurance law applicable to resident operators below that age.

6. Ten States⁸ permit a nonresident who is at least 18 years of age, whose home State or country does not require the licensing of operators, to operate for a specified period any motor vehicle which is duly registered in the home State or country of such nonresident.

In 12 States⁹ the age limit is 16 years; in 1 State each it is 14,¹⁰ 15,¹¹ and 21 years;¹² while in 15 States¹³ it is merely required that the nonresident shall be of a proper age to operate lawfully in his home State.

The period during which this class of nonresident may drive without obtaining an operator's license is limited to 90 days by 11 States,¹⁴ to 60 days by 1 State,¹⁵ to 30 days by 14 States,¹⁶ to the reciprocity period by 12 States,¹⁷ to the time it takes to pass through the State by Georgia, and to such time as the State highway commission shall fix by South Carolina.

MINIMUM AGE FOR UNRESTRICTED OPERATORS' LICENSES

In 25 States¹⁸ an unrestricted operator's license may not be issued to any person under the age of 16 years; in 5 States¹⁹ the age limit is 15 years, in 4 States²⁰ it is 18 years, in 4 more States²¹ it is 14 years, in 1 State²² it is 17 years, and in 2 States²³ the law does not fix a minimum age. It may be proper here to point out that of the eight States that do not have drivers' license laws, Florida and Louisiana declare it unlawful for persons under 14 years of age to operate a motor vehicle; Illinois, South Dakota, and Wyoming fix the minimum age at 15; Missouri fixes it at 16; while Mississippi and Oklahoma have no provision covering the matter.

MINIMUM AGE FOR DRIVERS OF SCHOOL BUSES

The driver of any motor vehicle while in use as a school bus for the transportation of pupils to and from school must be over 21 years

⁸ Arkansas, Colorado, Georgia, Idaho, Indiana, Kansas, New York, North Carolina, Oregon, and Utah.

⁹ Connecticut, Delaware, Kentucky, Maryland, Nevada, New Mexico, North Dakota, Tennessee, Texas, Virginia, Washington, and Wisconsin.

¹⁰ Michigan.

¹¹ Iowa.

¹² California.

¹³ Alabama, Arizona, Maine, Massachusetts, Minnesota, Nebraska, New Hampshire, New Jersey, Ohio, Pennsylvania, Rhode Island, South Carolina, Vermont, West Virginia, and the District of Columbia.

¹⁴ Arkansas, Colorado, Idaho, Kansas, Michigan, New Mexico, North Carolina, Oregon, Texas, Utah, and West Virginia.

¹⁵ Indiana.

¹⁶ Arizona, California, Delaware, Iowa, Kentucky, Nebraska, Nevada, New York, North Dakota, Ohio, Tennessee, Virginia, Washington, and Wisconsin.

¹⁷ Alabama, Connecticut, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Vermont, and the District of Columbia.

¹⁸ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Kansas, Kentucky, Maryland, Massachusetts, Nebraska, New Hampshire, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Washington, Wisconsin, and the District of Columbia.

¹⁹ Iowa, Maine, Minnesota, Nevada, and West Virginia.

²⁰ Indiana, New York, Vermont, and Virginia.

²¹ Michigan, New Mexico, South Carolina, and Texas.

²² New Jersey.

²³ Montana and Ohio.

of age in 12 States,²⁴ over 18 in 7 States,²⁵ over 17 in 1 State,²⁶ and over 16 in 4 States.²⁷

MINIMUM AGE FOR CHAUFFEURS

In 3 States²⁸ no person under 21 years of age may be granted a chauffeur's license ("chauffeur" is understood to mean any person who is employed for the principal purpose of operating a motor vehicle and any person who drives a motor vehicle while in use as a public or common carrier of persons or property); in 19 States²⁹ the minimum age for chauffeurs is 18 years, in Colorado it is 17 years, and in West Virginia it is 15 years.

In some States minimum ages are also prescribed for chauffeurs engaged in driving certain classes of vehicles.

For drivers of common carriers of property five States³⁰ fix the age limit at 21 years, seven³¹ at 18 years, Colorado at 17 years, and Idaho at 16 years.

In 20 States³² no person under 21 years of age may operate a public-passenger bus; in six States³³ the age limit for such drivers is 18 years, in Colorado it is 17 years, and in Idaho 16 years.

The foregoing is not deemed exhaustive of this subject, nor as entirely accurate, since in many States the age limits and qualifications of drivers of common carriers of persons and property are fixed by the public service commission or similar regulatory body.

PERSONS NOT LICENSED

Twenty-five States³⁴ forbid the issuance of a license to any person as an operator or chauffeur whose license has been suspended, during the period of such suspension; or to any person whose license has been revoked, during the period of such revocation.

All of the above States and, in addition, West Virginia prohibit the issuance of a license to any person who is a habitual drunkard or who is addicted to the use of narcotic drugs.

In 24 States³⁵ a license shall not be issued to any person who has previously been adjudged to be afflicted with, or to be suffering from, any mental disability or disease and who has not at the time of application been restored to competency by the methods provided by law.

²⁴ Arizona, Arkansas, Delaware, Indiana, Kentucky, Massachusetts, Ohio, Pennsylvania, Rhode Island, Tennessee, Texas, and Utah.

²⁵ California, Georgia, Missouri, Michigan, New Mexico, Oregon, and Washington.

²⁶ Colorado.

²⁷ Idaho, Iowa, Kansas, and Montana.

²⁸ Indiana, New York, and Utah.

²⁹ Arizona, Arkansas, California, Connecticut, Georgia, Kansas, Maine, Michigan, New Hampshire, New Mexico, North Carolina, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Vermont, Virginia, and the District of Columbia.

³⁰ Arkansas, Indiana, Kansas, New York, and Tennessee.

³¹ Connecticut, Georgia, Illinois, Michigan, North Carolina, Texas, and Vermont.

³² Arizona, Arkansas, Delaware, Indiana, Iowa, Kansas, Kentucky, Michigan, Missouri, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Virginia, and Washington.

³³ Connecticut, Georgia, Illinois, Louisiana, Texas, and Vermont.

³⁴ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Michigan, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington, and Wisconsin.

³⁵ Alabama, Arizona, Arkansas, California, Colorado, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Michigan, New Mexico, North Carolina, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, and Wisconsin.

A license may not be issued, in 11 States,³⁶ to any person who is unable to understand highway warning signs in the English language.

The motor-vehicle administrator is given discretion, in 37 States,³⁷ to refuse a license to any person who by reason of physical or mental disability, or other cause, would not be able to operate a motor vehicle with safety upon the highways.

In Michigan a license may not be issued to a habitually careless driver or to a habitual criminal; nor, in New Mexico, to any person who has been convicted of four charges of reckless driving within 1 year, or to any person who has been convicted of two felonies in the commission of which a motor vehicle was used; nor, in North Dakota to any person who has been convicted of three misdemeanors within 2 years; nor, in Pennsylvania, to any person whose hands have been lost or whose vision is less than 50-percent normal when corrected by glasses; nor, in Washington, to any person whose vision is not 20/50 or better when wearing glasses. In Oregon and Washington, persons with diseases or physical defects may be required to furnish a medical certificate before a license will be issued to them.

INSTRUCTION PERMITS AND TEMPORARY LICENSES

Twenty-six States³⁸ provide that any person who, except for his lack of instruction in operating a motor vehicle, would be qualified to obtain an operator's license, may have issued to him a temporary instruction permit, entitling the applicant, while such permit is in his immediate possession, to drive a motor vehicle for a prescribed number of days provided he is accompanied by a licensed operator or chauffeur who actually occupies a seat beside him.

Seven States,³⁹ instead of issuing learners' permits, provide that any otherwise qualified person may drive if accompanied by a licensed operator or chauffeur who shall be civilly liable for the negligence of the beginner.

The administrative agency, in 13 States,⁴⁰ may issue a temporary permit to an applicant who is apparently qualified to drive a motor vehicle. Such permit enables the applicant to drive without an accompanying instructor, while the administrative agency is completing an investigation into all facts relative to the right of the applicant to receive an operator's license.

FORM AND CONTENTS OF APPLICATION FOR LICENSE

Applications for operators' licenses must, in 35 States,⁴¹ be verified before a person authorized to administer oaths. As a general rule,

³⁶ Arizona, Indiana, Iowa, New Mexico, North Carolina, Pennsylvania, Texas, Utah, Washington, West Virginia, and Wisconsin.

³⁷ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

³⁸ Arizona, Arkansas, California, Colorado, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, New Jersey, New Mexico, New York, Ohio, Oregon, Pennsylvania, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

³⁹ Connecticut, Maine, Massachusetts, New Hampshire, North Carolina, Rhode Island, and Vermont.

⁴⁰ Arkansas, Colorado, Georgia, Idaho, Iowa, Kansas, Maryland, Michigan, Ohio, Oregon, Pennsylvania, Utah, and Virginia.

⁴¹ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Massachusetts, Michigan, Nebraska, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

such applications are made on forms prescribed by the motor-vehicle administrator, and must show the name, age, and residence of the applicant, and such other information as may reasonably be required. In addition the applicant is required, in 31 States,⁴² to show whether he has previously been licensed as an operator or chauffeur, and if so, by what State; whether his application for a license has ever been refused; whether his license has ever been suspended or revoked; and the date of and reason for such refusal, suspension, or revocation. Specific information is required as to physical defects in eight States;⁴³ as to driving experience in four States;⁴⁴ and as to the amount and type of automobile insurance carried in two States.⁴⁵

APPLICATIONS OF MINORS FOR LICENSES

Twenty-five States⁴⁶ require that the application of any person under the age of 18 years shall be signed by the parents, guardian, or employer of such person. In California and Nevada a similar requirement applies to all applicants under 21; in Colorado to all under 17; and in South Carolina to all under 14 years of age.

Six States⁴⁷ provide that any negligence or willful misconduct of a minor under the age of 18, while driving a motor vehicle upon a highway, shall be imputed to the person who signed the application of such minor. Such person is jointly and severally liable with the minor for any damages resulting from the minor's negligence. In California a similar provision applies with respect to persons under 21; in Colorado to those under 17; and in North Dakota to those under 16 years of age. Maine has a statute whereby anyone who permits an unauthorized person under 18 years of age to drive is jointly liable for the negligence of such unauthorized driver, and Pennsylvania and Virginia have a similar provision applicable to persons who permit children under the age of 16 to operate a motor vehicle.

EXAMINATION OF APPLICANTS

In six States⁴⁸ no examination or test of any applicant's ability to operate a motor vehicle is required as a prerequisite to the issuance of a driver's license. Five other States⁴⁹ that do not require an examination or test of every new applicant's ability to operate a motor vehicle give the official issuing the license discretion to examine applicants whom he suspects of being unfit to drive. Thirty States⁵⁰ require every new applicant for a driver's license to pass such tests

⁴² Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Massachusetts, Michigan, Minnesota, Nebraska, New Mexico, New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

⁴³ Alabama, California, Indiana, Michigan, Minnesota, Nebraska, North Dakota, and Wisconsin.

⁴⁴ Arizona, California, Nebraska, and Wisconsin.

⁴⁵ North Dakota and Wisconsin.

⁴⁶ Arizona, Arkansas, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Michigan, New Mexico, New York, North Carolina, Ohio, Oregon, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and the District of Columbia.

⁴⁷ Arizona, Arkansas, Delaware, Idaho, Kentucky, and Utah.

⁴⁸ Alabama, Kentucky, Minnesota, Montana, Nevada, and Texas.

⁴⁹ Georgia, Maine, Nebraska, North Dakota, and Wisconsin.

⁵⁰ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Indiana, Iowa, Kansas, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia, and the District of Columbia.

as are prescribed by law or administrative regulation and to give an actual demonstration of ability to exercise ordinary and reasonable control in the operation of a motor vehicle.

SCOPE OF EXAMINATION

The foregoing 30 States require that every applicant for a driver's license must satisfy the administrator that he has the proper physical and mental ability to operate a motor vehicle on the highways so as not to jeopardize the safety of persons or property. Tests are specifically required in 10 States⁵¹ of the applicant's vision; in 9 States⁵² of his ability to read and understand highway signs regulating, warning, and directing traffic; and in 15 States⁵³ of his knowledge of the traffic laws of the State. The administrator is given specific authority in six States⁵⁴ to require a physician's or oculist's certificate from applicants whom he has reason to believe are suffering from physical or mental defects. The law of Washington⁵⁵ provides for a thorough examination consisting of a general test of vision, color blindness, stereoscopic or depth perception, reaction time; a written test on motor vehicle laws consisting of 25 questions, 80 percent of which must be answered correctly; and an actual driving test conducted by the Washington State patrol.

REEXAMINATION OF PREVIOUSLY LICENSED OPERATORS

In all States⁵⁶ that require examination for drivers' licenses, except Washington, the administrator is authorized to waive the examination of any person who applies for a renewal of his license. Washington requires that every driver must be examined at least once every 4 years. Some States require, or authorize the administrator to require, reexamination of accident-prone drivers. Four States⁵⁷ authorize the administrator to require, when in his judgment it is necessary to public safety, the reexamination of any operator; while in Colorado all operators involved in accidents must be reexamined. In Delaware the vehicle commissioner must reexamine anyone whom the State police superintendent or the chief of police of Wilmington recommends. He must also reexamine all operators who reach 75 years of age. All operators must be reexamined in Oregon when they attain 70 years of age.

WHO CONDUCTS EXAMINATIONS

In 14 States⁵⁸ the administrator is authorized to appoint as examiners, sheriffs, chiefs of police, or other officials or private citizens whom he deems qualified. In 18 States⁵⁹ the examinations are

⁵¹ Arkansas, California, Colorado, Idaho, Kansas, New Mexico, Ohio, Tennessee, Washington, and the District of Columbia.

⁵² Arkansas, Colorado, Idaho, Kansas, Michigan, New Mexico, Ohio, Rhode Island, and Tennessee.

⁵³ Arkansas, California, Colorado, Connecticut, Idaho, Kansas, Nebraska, New Mexico, Ohio, Pennsylvania, Rhode Island, Tennessee, Washington, West Virginia, and the District of Columbia.

⁵⁴ Connecticut, North Carolina, Pennsylvania, Vermont, Washington, and Wisconsin.

⁵⁵ Laws of 1937, ch. 188.

⁵⁶ See note 50, *supra*.

⁵⁷ California, Oregon, Vermont, and West Virginia.

⁵⁸ Arizona, Arkansas, Colorado, Idaho, Iowa, Kansas, Michigan, New Mexico, North Carolina, Oregon, Tennessee, Utah, Virginia, and Washington.

⁵⁹ California, Connecticut, Delaware, Georgia, Indiana, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Vermont, West Virginia, and the District of Columbia.

conducted by full-time agents of the administrator or by the State police.

When an examination is required by the motor-vehicle administrator, it is conducted in Nebraska by the county treasurer; in North Dakota by agents of the highway department; and in Wisconsin by sheriffs or chiefs of police.

RESTRICTED LICENSES

Nineteen States⁶⁰ specifically authorize the administrator to impose restrictions suitable to the licensee's driving ability with respect to the type of or special mechanical control devices required on motor vehicles which he may operate, or such other restrictions as the administrator may determine to be appropriate to assure the safe operation of motor vehicles by the licensee. In several other States broad discretionary powers lodged in the administrator would probably authorize him to impose such reasonable restrictions as he might see fit. Another type of restricted license authorized in a number of States is that which may be issued to minors not old enough to be eligible for an unrestricted license. In 10 States,⁶¹ such license may be issued to children over 14; in 2 States⁶² to those over 16; and in Texas to a person under 14 years after a hearing before the county judge. The restrictions most frequently imposed are that the licensed minor shall use a motor vehicle only to travel to and from school, or in the conduct of his parent's business, or during daylight hours only, or on rural roads only, or some combination of these limitations.

DURATION OF LICENSES

Operators' licenses must be renewed annually in 18 States;⁶³ every 2 years in 7 States;⁶⁴ every 3 years in 7 States;⁶⁵ every 4 years in 1 State;⁶⁶ and every 5 years in 1 State,⁶⁷ except that licenses issued therein after 1939 shall be renewed every 3 years. There is no requirement for renewal of licenses in seven States.⁶⁸

NOTICE OF CHANGE OF ADDRESS OR NAME

In 15 States,⁶⁹ whenever any holder of an operator's license shall move from the address named in the license issued to him, he must within a reasonable time notify the motor vehicle administrator of his new address in writing. When the name of any licensee is changed a similar notification is required in 10 States.⁷⁰

⁶⁰ Arkansas, California, Colorado, Connecticut, Idaho, Kansas, Massachusetts, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Vermont, Washington, and the District of Columbia.

⁶¹ California, Idaho, Indiana, Iowa, Kansas, Nebraska, Oregon, Tennessee, Virginia, and Wisconsin.

⁶² New York and Vermont.

⁶³ Alabama, Arkansas, Connecticut, Delaware, Indiana, Kansas, Kentucky, Maine, Massachusetts, Montana, New Hampshire, New Jersey, New Mexico, Ohio, Pennsylvania, Rhode Island, Tennessee, and Vermont.

⁶⁴ California, Georgia, Idaho, Iowa, North Dakota, Oregon, and Washington.

⁶⁵ Colorado, Michigan, New York, North Carolina, Texas, Utah, and the District of Columbia.

⁶⁶ South Carolina.

⁶⁷ Virginia.

⁶⁸ Arizona, Maryland, Minnesota, Nebraska, Nevada, West Virginia, and Wisconsin.

⁶⁹ Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Indiana, Kansas, Michigan, New Jersey, New Mexico, North Dakota, South Carolina, Utah, and the District of Columbia.

⁷⁰ Arkansas, Colorado, Idaho, Kansas, Michigan, New Mexico, North Dakota, Oregon, South Carolina, and Utah.

LICENSE RECORDS

In 31 States,⁷¹ the administrator is required to keep a record of all applications for licenses granted or denied and of all licenses suspended or revoked, with the reasons therefor.

CANCELATION OF LICENSES

It is provided in 16 States⁷² that an operator's license automatically becomes void, or may be summarily canceled by the administrator, upon determination that the licensee was not entitled to the issuance thereof or that said licensee committed any fraud in making his application. In Texas, a license is automatically canceled upon adjudication of the licensee's insanity, epilepsy, habitual drunkenness, or drug addiction.

SUSPENSION OF NONRESIDENTS' DRIVING PRIVILEGES

The motor-vehicle administrator is specifically authorized, in 29 States,⁷³ to suspend or revoke the driving privileges of nonresidents for the same causes and in like manner as similar privileges of residents may be suspended or revoked; and in 25 States⁷⁴ the administrator is further authorized, upon receiving a record of the conviction of a nonresident of an offense against the motor-vehicle laws, to forward a certified copy of such conviction to the motor-vehicle administrator of the State wherein such person is a resident.

SUSPENSION OF LICENSE UPON CONVICTION IN ANOTHER STATE

In 28 States,⁷⁵ the administrator is specifically authorized and directed to suspend or revoke the driver's license of any resident upon receipt of notice of the conviction of such resident of an offense against the motor-vehicle laws of another State, if conviction of such offense would in the home State be sufficient ground for the suspension or revocation of his license.

To facilitate the operation of such laws, the courts of 37 States⁷⁶ are required to forward to the administrator a record of every conviction of an offense that requires the suspension of a driver's license.

⁷¹ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Nebraska, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

⁷² Arkansas, California, Colorado, Connecticut, Idaho, Kansas, Maine, Nebraska, New Jersey, New Mexico, North Carolina, Oregon, Rhode Island, South Carolina, Wisconsin, and the District of Columbia.

⁷³ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Vermont, Virginia, Wisconsin, and the District of Columbia.

⁷⁴ Arizona, Arkansas, Colorado, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, Utah, Virginia, Washington, and the District of Columbia.

⁷⁵ Arizona, Arkansas, Colorado, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

⁷⁶ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

MANDATORY REVOCATION OF LICENSE ⁷⁷

In 30 States ⁷⁸ the motor-vehicle administrator or the court having jurisdiction must forthwith revoke the license of any operator convicted of manslaughter resulting from the operation of a motor vehicle; and in 36 States ⁷⁹ must revoke the license of any operator convicted of driving while under the influence of intoxicating liquor or narcotic drugs.

Revocation of license is mandatory in 25 States ⁸⁰ upon conviction of any felony in the commission of which a motor vehicle was used; in 31 States ⁸¹ upon conviction of failure to stop and render aid or disclose identity in the event of a motor vehicle accident resulting in the death or personal injury of another; and in 26 States ⁸² upon conviction of perjury or the making of a false affidavit or statement required by any law relating to the licensing of drivers or to the ownership or operation of motor vehicles.

In 17 States ⁸³ revocation of a driver's permit is mandatory upon three convictions for reckless driving within a period of 12 months; in 2 States ⁸⁴ upon conviction of two charges of reckless driving within 12 months; in 5 States ⁸⁵ upon the first conviction of reckless driving; and in Washington upon conviction of three charges of reckless driving within a period of 2 years.

Revocation is also mandatory in five States ⁸⁶ upon conviction of permitting a person under the influence of intoxicating liquor or narcotic drugs to drive; in three States ⁸⁷ upon conviction of drunken driving resulting in the death or injury of another; in three States ⁸⁸ upon conviction of misuse of license; in three States ⁸⁹ upon conviction of a violation of any motor-vehicle law constituting a misdemeanor; in three States ⁹⁰ upon conviction of assault committed with a motor vehicle; in Delaware when death results from

⁷⁷ Mandatory revocation of license for failure to satisfy a judgment resulting from negligence in the operation of a motor vehicle is discussed in connection with financial responsibility laws, at p. 63.

⁷⁸ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Montana, Nebraska, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, and Wisconsin.

⁷⁹ Alabama, Arizona, Arkansas, California (applies to both drunkenness and drugs if person convicted is less than 18; if person is over that age, applies to drugs only), Colorado, Connecticut, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and the District of Columbia. See note 62, p. 81.

⁸⁰ Alabama, Arizona, Arkansas, Colorado, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, and Wisconsin.

⁸¹ Alabama, Arizona, California, Colorado, Connecticut, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

⁸² Alabama, Arizona, Arkansas, Colorado, Connecticut, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Massachusetts, Michigan, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Tennessee, Utah, Virginia, Washington, and Wisconsin.

⁸³ Arizona, Arkansas, California, Colorado, Oklahoma, Idaho, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, New Mexico, North Dakota, Oregon, South Carolina, and Tennessee.

⁸⁴ North Carolina and Virginia.

⁸⁵ Connecticut, Massachusetts, New Hampshire, Utah, and Wisconsin.

⁸⁶ Alabama, New Jersey, Pennsylvania, Rhode Island, and West Virginia.

⁸⁷ California, Nebraska, and Wisconsin. (This is a different offense than drunken driving, note 79.)

⁸⁸ Colorado, Connecticut, and Massachusetts.

⁸⁹ New Hampshire, New York, and Texas.

⁹⁰ Kentucky, New York, and West Virginia.

an assault committed with a motor vehicle; in Texas upon two convictions of aggravated assault with a motor vehicle; in Connecticut and Massachusetts upon conviction of racing on the highway; and in New Hampshire and Rhode Island upon conviction of using a motor vehicle to carry away stolen crops or garden produce. In California the license of any operator under 18 years of age must be revoked upon conviction of two charges of speeding within 6 months, or of one charge of reckless driving or of failure to stop after an accident. In Connecticut unauthorized use of a motor vehicle, operating while license is suspended, tampering with a motor vehicle, or operating an overweight vehicle requires revocation of license.

DISCRETIONARY REVOCATION OF LICENSE

In 18 States⁹¹ the administrator may suspend or revoke a driver's license upon sufficient evidence that the licensee has committed any offense, conviction of which in court would require mandatory revocation of license, and in 22 States⁹² upon sufficient evidence that the driver has been involved in any accident resulting in the death or personal injury of another or serious damage to property.

The administrator in 23 States⁹³ may suspend the license of any driver if he has sufficient evidence that such driver is habitually reckless or negligent, or that he is incompetent to operate a motor vehicle, while such license may be suspended in 11 States⁹⁴ for any cause deemed sufficient by the administrator.

However, in two States⁹⁵ the administrator may suspend a driver's license only after conviction of specified offenses, and in four States⁹⁶ the power to suspend licenses is apparently vested exclusively in the courts.

PERIOD OF REVOCATION

Revocation of an operator's license must be for a period of at least 1 year in 22 States;⁹⁷ for a period of not less than 6 months in two States;⁹⁸ and for a period of not less than 3 months in two other States.⁹⁹ In a number of States the period of revocation varies according to the seriousness and frequency of recurrence of the offense. For specified serious offenses, in five States¹ a driver's license may be revoked for the remainder of his life; in three States² for a maximum period of 5 years, and in two States³ for a maximum period of 3 years.

⁹¹ Arizona, Arkansas, Colorado, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Minnesota, New York, North Carolina, Oregon, Pennsylvania, Tennessee, Utah, Virginia, and Washington.

⁹² Arizona, Arkansas, California, Colorado, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Nebraska, New York, North Carolina, Oregon, Pennsylvania, South Carolina, Tennessee, Utah, Virginia, and Washington.

⁹³ Arizona, Arkansas, California, Colorado, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Nebraska, New Mexico, New York, North Carolina, Oregon, Pennsylvania, South Carolina, Tennessee, Utah, Virginia, and Washington.

⁹⁴ Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New Mexico, Rhode Island, Vermont, West Virginia, and the District of Columbia.

⁹⁵ Alabama and Nebraska.

⁹⁶ Georgia, Nevada, Ohio, and Wisconsin.

⁹⁷ Arizona, Arkansas, California, Colorado, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Utah, Virginia, Washington, and West Virginia.

⁹⁸ New York and Tennessee.

⁹⁹ Alabama and Maryland.

¹ Massachusetts, New Jersey, New York, Vermont, and West Virginia.

² Connecticut, Maine, and Rhode Island.

³ New Hampshire and Virginia.

PERIOD OF SUSPENSION

Nineteen States⁴ provide that a driver's license shall not be suspended for a period of more than 1 year; and in 19 other States⁵ no maximum period of suspension is fixed. Two States⁶ set the maximum period of suspension at 6 months; and in Massachusetts the minimum period is 6 months.

SURRENDER AND RETURN OF LICENSE

In 33 States⁷ the administrator upon suspending or revoking a license shall require that such license be surrendered to him for retention for the duration of the suspension or revocation. A correlative provision has been enacted for 34 States⁸ making it a misdemeanor for any licensee to fail or refuse to surrender to the administrator, upon his lawful demand, any operator's license which has been suspended, revoked, or canceled.

Twenty-five States⁹ specifically prohibit the operation of a motor vehicle therein under a license permit or registration certificate granted by any other State during the period for which such permit has been suspended by the issuing State.

OFFENSES AGAINST THE LICENSE LAWS

It is a misdemeanor in 30 States¹⁰ for any person to display, or to cause or permit to be displayed, or to have in his possession, any canceled, revoked, suspended, fictitious, or fraudulently altered operator's or chauffeur's license. It is likewise a misdemeanor in the aforesaid States for any person to lend his operator's or chauffeur's license to any other person, or knowingly to permit the use thereof by another, or to display or represent as his own any operator's or chauffeur's license not issued to him. In 29 States¹¹ it is a misdemeanor to use a false or fictitious name in any application for an operator's or chauffeur's license or knowingly to make a false statement, conceal a material fact, or otherwise to commit a fraud, in such application.

⁴ Arizona, Arkansas, Colorado, Delaware, Idaho, Indiana, Iowa, Kansas, Michigan, Minnesota, Nebraska, New Mexico, North Carolina, Ohio, Oregon, Tennessee, Utah, Virginia, and Washington.

⁵ Alabama, Connecticut, Georgia, Kentucky, Maine, Maryland, Massachusetts, Nevada, New Hampshire, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Carolina, Texas, Vermont, West Virginia, Wisconsin, and the District of Columbia.

⁶ California and New York.

⁷ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Indiana, Iowa, Kansas, Maryland, Michigan, Minnesota, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and the District of Columbia.

⁸ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and the District of Columbia.

⁹ Arkansas, California, Colorado, Delaware, Idaho, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Nebraska, Nevada, North Carolina, North Dakota, Ohio, Oregon, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, and the District of Columbia.

¹⁰ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Michigan, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

¹¹ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington, and the District of Columbia.

FALSE AFFIDAVITS

Sixteen States ¹² specify that any person who makes any false affidavit, or knowingly swears to or affirms falsely any matter or thing relative to the licensing of motor vehicle operators required by law to be sworn to or affirmed, shall be guilty of perjury.

PENALTIES FOR DRIVING WHILE LICENSE IS SUSPENDED OR REVOKED

The penalties for driving a motor vehicle upon the highways while the license of the operator is canceled, suspended, or revoked, are shown in table 2.

It may be noted that 8 States ¹³ have identical penalties for this offense, and that in 15 States ¹⁴ a person convicted of driving while his license is revoked must be imprisoned and is also subject to a fine.

PERMITTING UNAUTHORIZED MINOR TO DRIVE

It is a misdemeanor in 19 States ¹⁵ for anyone to cause, or knowingly to permit, his child or ward under the age of 18 years to drive a motor vehicle when such minor is not authorized by law to drive. Nevada has a similar provision with reference to minors under 21 years of age, Nebraska and Virginia as to those under 16, and South Carolina as to those under 14.

TABLE 2.—Penalties for driving while license is suspended or revoked ¹

	Fine		Imprisonment		May both fine and imprisonment be imposed	Must offender be given prison sentence
	Minimum	Maximum	Minimum	Maximum		
	Dollars	Dollars	Days	Months		
Alabama.....	10	300		6	Yes.....	No.
Arizona.....		500	2	6	Yes.....	Yes.
Arkansas.....		1,000		12	Yes.....	No.
California.....		500		6	Yes.....	No.
Colorado.....		200		3	Yes.....	No.
Connecticut.....	100	200		6	Yes.....	No.
Delaware.....	50	200	30	6	Yes.....	No.
Georgia.....		50		6	No.....	No.
Idaho.....		500	2	6	Yes.....	Yes.
Indiana.....		500		6	Yes.....	No.
Iowa.....		100		1	No.....	No.
Kansas.....		500	2	6	Yes.....	Yes.
Kentucky.....		500	7	6	Yes.....	Yes.
Maine.....		100		3	Yes.....	No.
Maryland.....	100	1,000	30	12	Yes.....	No.
Massachusetts.....	50	100	10	1/3	Yes.....	Yes. ³
Michigan.....		100	2	3	Yes.....	Yes.
Minnesota.....		100		3	No.....	No.
Montana ²						
Nebraska.....	100	1,000	30	12	Yes.....	No.
Nevada.....		500		6	Yes.....	No.
New Hampshire.....		100		6	Yes.....	No.

¹ Florida, Illinois, Louisiana, Mississippi, Missouri, Oklahoma, South Dakota, and Wyoming have no drivers' license law.

² State has no law on this point.

³ Only on second offense.

¹² Arkansas, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Michigan, New Hampshire, New Mexico, North Carolina, Ohio, Oregon, Utah, Virginia, and Washington.

¹³ Arkansas, Idaho, Kansas, Ohio, Oregon, Tennessee, Texas, and Virginia.

¹⁴ Arkansas, Idaho, Kansas, Kentucky, Massachusetts, Michigan, North Carolina, Ohio, Oregon, Rhode Island, Tennessee, Texas, Utah, Virginia, and Washington.

¹⁵ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Michigan, New Jersey, New Mexico, North Carolina, Ohio, Oregon, Utah, and Washington.

TABLE 2.—Penalties for driving while license is suspended or revoked—Con.

	Fine		Imprisonment		May both fine and imprisonment be imposed	Must offender be given prison sentence
	Minimum	Maximum	Minimum	Maximum		
	<i>Dollars</i>	<i>Dollars</i>	<i>Days</i>	<i>Months</i>		
New Jersey.....	100	500	-----	3	Yes.....	No.
New Mexico.....	-----	100	-----	12	Yes.....	No.
New York.....	-----	500	-----	6	Yes.....	Yes.
North Carolina.....	-----	500	-----	1	Yes.....	No.
North Dakota.....	-----	100	-----	6	Yes.....	Yes.
Ohio.....	-----	500	2	6	Yes.....	Yes.
Oregon.....	-----	500	2	6	Yes.....	Yes.
Pennsylvania.....	-----	200	-----	36	Yes.....	No.
Rhode Island.....	-----	500	-----	12	Yes.....	Yes. ⁴
South Carolina.....	10	100	-----	1	Yes.....	No.
Tennessee.....	-----	500	2	6	Yes.....	Yes.
Texas.....	-----	500	2	6	Yes.....	Yes.
Utah.....	-----	500	-----	6	Yes.....	Yes.
Vermont.....	-----	500	-----	24	Yes.....	No.
Virginia.....	-----	500	2	6	Yes.....	Yes.
Washington.....	-----	1,000	10	12	Yes.....	Yes.
West Virginia.....	10	100	30	6	Yes.....	No.
Wisconsin.....	50	100	30	6	Yes.....	No.
District of Columbia.....	100	500	30	12	Yes.....	No.

⁴ Only if revocation was for drunken driving.

PERMITTING UNAUTHORIZED PERSON TO DRIVE

In 27 States ¹⁶ it is a misdemeanor for any person knowingly to permit any motor vehicle owned by him or under his control to be driven upon any highway by any person who is not authorized by law to drive.

EMPLOYING UNLICENSED CHAUFFEUR

It is a misdemeanor in 22 States ¹⁷ to employ as a chauffeur any person who is not licensed as provided by law.

RENTING MOTOR VEHICLE TO ANOTHER

In 18 States ¹⁸ it is a misdemeanor to rent a motor vehicle to any person unless such person is at the time duly licensed according to the law of his domicile, except to a nonresident whose home State does not require that motor-vehicle operators be licensed.

QUALIFICATIONS OF DRIVERS OPERATING MOTOR VEHICLES UNDER THE JURISDICTION OF THE UNITED STATES INTERSTATE COMMERCE COMMISSION

On and after July 1, 1937, no motor carrier shall drive, or require or permit any person to drive, any motor vehicle operated in interstate or foreign commerce, unless the person so driving possesses the following minimum qualifications: ¹⁹

¹⁶ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, Washington, and West Virginia.

¹⁷ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Massachusetts, Michigan, New Hampshire, New Mexico, North Carolina, Ohio, Oregon, Utah, Vermont, Virginia, and Washington.

¹⁸ Arkansas, California, Colorado, Connecticut, Georgia, Idaho, Kansas, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, South Carolina, Tennessee, Utah, Washington, and the District of Columbia.

¹⁹ Prescribed by the Interstate Commerce Commission in ex parte MC-4, Motor Carrier Safety Regulations, decided December 23, 1936.

- (a) Good physical and mental health.
- (b) No physical deformity or loss of limb likely to interfere with safe driving.
- (c) Good eyesight in both eyes (either without glasses, or by correction with glasses), including adequate perception of red and green colors.
- (d) Adequate hearing.
- (e) Experience in driving some type of motor vehicle (including private automobiles) for not less than 1 year, including experience throughout the four seasons.
- (f) Competency by reason of experience or training to operate safely the type of vehicle or vehicles which he drives.
- (g) Knowledge of rules and regulations issued by the Commission under the Motor Carrier Act, 1935, pertaining to the driving of motor vehicles.
- (h) Shall not be addicted to the use of narcotic drugs.
- (i) Shall neither use, nor be under the influence of, any alcoholic liquor or beverage while on duty, nor otherwise make excessive use thereof.
- (j) Must be not less than 21 years of age, unless the person was engaged in so driving on July 1, 1937, or within 1 year prior thereto, but in no case shall be less than 18 years of age.
- (k) Must be able to read and speak the English language, unless the person was engaged in so driving on July 1, 1937, or within 1 year prior thereto, but in any case must have ability to understand traffic and warning signs.

Regulatory bodies in many States have prescribed more or less similar qualifications for drivers of vehicles within their respective jurisdictions.

HOURS OF SERVICE OF COMMERCIAL DRIVERS

A large number of States, either by statute or by public service commission regulations, have prescribed certain limits on the hours of service for drivers of one or more of those classes of vehicles known as common carriers, contract carriers, motor carriers, or commercial carriers.

The maximum length of time that any one person may drive such vehicles without resting is 7 hours in North Carolina, 8 hours in 5 States,²⁰ 10 hours in 9 States,²¹ 12 hours in 17 States,²² and 14 hours in 2 States.²³

The maximum number of hours a driver may be on duty, when driving is not continuous, is limited within any 24-hour period to 8 hours in 2 States,²⁴ to 10 hours in 8 States,²⁵ to 12 hours in 7 States,²⁶ to 14 hours in 8 States,²⁷ and to 16 hours in 10 States.²⁸

²⁰ Alabama, Delaware, Idaho, Indiana, and Utah.

²¹ Arizona, California, Georgia, Illinois, New Mexico, New York, North Dakota, Washington, and Wyoming.

²² Arkansas, Connecticut, Florida, Kansas, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Nevada, New Hampshire, New Jersey, Oregon, Rhode Island, South Dakota, and the District of Columbia.

²³ Ohio, and Texas.

²⁴ Montana (busses only), and Virginia.

²⁵ Arizona, Colorado, Idaho, Montana (motor carriers only), North Dakota, Oklahoma, South Carolina, and Washington.

²⁶ Iowa, Michigan, Nebraska, Oregon, South Dakota, Tennessee, and Wisconsin.

²⁷ Arkansas, Georgia, Kansas, Michigan (private trucks), North Carolina, Ohio, Texas, and Wyoming.

²⁸ Connecticut, Delaware, Indiana, Kentucky, Maine, Massachusetts (for hire trucks), Mississippi, New Hampshire, New Mexico, and Rhode Island.

The maximum permitted time on duty is limited to 8 hours in any period of 12 hours in Alabama, to 10 hours in a period of 14 hours in New York, to 10 hours in a period of 15 in California and Utah, to 10 hours in a period of 16 in Illinois and Massachusetts (bus drivers only), to 12 hours in a period of 15 in Nevada, and to 12 hours in a period of 16 hours in New Jersey.

Virginia, in addition to the restriction on drivers of common carriers, limits the operator of any motor vehicle to 13 hours of driving in a 24-hour period.

The minimum period of rest which drivers must have before starting a new period of duty is 6 hours in Oklahoma, 8 hours in 26 States,²⁹ 9 hours in California (applies only to bus drivers), 10 hours in 6 States,³⁰ and 12 hours in South Dakota.

The foregoing information is shown by States in table 3.

The Bureau of Motor Carriers of the United States Interstate Commerce Commission has prescribed the following regulation for drivers of vehicles within its jurisdiction:

No vehicle shall be driven by any driver while his ability or alertness is so impaired through fatigue, illness, or any other cause as to make it unsafe for him to drive or to continue to drive a motor vehicle, nor shall he be required or knowingly be permitted to drive while in such condition, except in case of grave emergency where the hazard to passengers would be increased by observance of the foregoing provisions.³¹

TABLE 3.—Hours of service for drivers of commercial vehicles¹

State	Maximum permitted consecutive hours of driving	Maximum permitted duty		Minimum rest between duty periods
		Time on duty	Within any period of—	
	Hours	Hours	Hours	Hours
Alabama.....	8	8	12	8
Arizona.....	10	10	24	8
Arkansas.....	12	14	24	8
California.....	10	10	15	8
Colorado.....		10	24	8
Connecticut.....	12	16	24	8
Delaware.....	8	16	24	8
Florida.....	12			8
Georgia.....	10	14	24	10
Idaho.....	8	10	24	
Illinois.....	10	10	16	8
Indiana.....	8	16	24	
Iowa.....		12	24	8
Kansas.....	12	14	24	
Kentucky.....	12	16	24	8
Louisiana.....			24	
Maine.....	12	16	24	8
Maryland.....				
Massachusetts.....	12	16	24	8
Michigan.....	12	12	24	10
Minnesota.....	12			
Mississippi.....	12	16	24	
Missouri.....		10	20	

¹ Part of the data presented in this tabulation is similar to a table in the Commercial Car Journal, vol. LIII, No. 2, p. 72, April 1937.

² 9 hours for busses.

³ 10 hours in 16 for busses.

⁴ 14 hours for private trucks.

²⁹ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Florida, Illinois, Iowa, Kentucky, Maine, Massachusetts, Montana (motor carriers), Nevada, New Hampshire, New Jersey, New Mexico, New York, Ohio, Rhode Island, South Carolina, Tennessee, Texas, Washington, Wyoming, and the District of Columbia.

³⁰ Georgia, Michigan, North Dakota, Oregon, Virginia, and Wisconsin.

³¹ Safety regulations, ex parte MC-4, decided December 23, 1936; at pt. II, sec. 5, p. 20.

TABLE 3.—Hours of service for drivers of commercial vehicles—Continued

State	Maximum permitted consecutive hours of driving	Maximum permitted duty		Minimum rest between duty periods
		Time on duty	Within any period of—	
	Hours	Hours	Hours	Hours
Montana.....	10	10	24	8
Nebraska.....	12	12	24	8
Nevada.....	12	12	15	8
New Hampshire.....	12	16	24	8
New Jersey.....	12	12	16	8
New Mexico.....	10	16	24	8
New York.....	10	10	14	8
North Carolina.....	7	14	24	10
North Dakota.....	10	10	24	8
Ohio.....	14	14	24	6
Oklahoma.....	12	10	24	10
Oregon.....	12	12	24	8
Pennsylvania.....	12	16	24	8
Rhode Island.....	12	10	24	8
South Carolina.....	12	12	24	12
South Dakota.....	12	12	24	8
Tennessee.....	14	14	24	8
Texas.....	8	10	15	8
Utah.....	10	10	24	8
Vermont.....	10	10	24	10
Virginia.....	10	10	24	8
Washington.....	12	12	24	10
West Virginia.....	10	14	24	8
Wisconsin.....	12	12	24	8
Wyoming.....	12	12	24	8
District of Columbia.....	12	12	24	8

⁵ 8 hours for busses.⁶ 12 hours for busses.⁷ Common carriers only.

LAWS RELATING TO THE CIVIL LIABILITY OF MOTOR-VEHICLE OPERATORS

CIVIL LIABILITY OF STATES AND THEIR SUBDIVISIONS

Nine States ³² have laws that expressly make either the State, counties, cities, towns, or other public corporations therein, or certain of them, civilly liable for damages on account of the death or bodily injury of persons or damage to property resulting from the negligent operation of a motor vehicle by any employee or agent of such State or subdivision thereof, while acting within the scope of his office, agency, or employment. Of these States, only 6 ³³ provide for State liability, 6 ³⁴ for county liability, 8 ³⁵ for municipal liability, and 6 ³⁶ for the liability of any other public corporation.

In New Jersey, all political subdivisions of the State must insure their motor-vehicle operators; and municipalities and counties are liable for damages incurred when any officer commandeers a car to pursue a law violator. Colorado authorizes school boards to procure liability and property-damage insurance to cover the operation of school busses. Ohio provides that it shall be a defense to any action brought against a municipality for damages resulting from the operation of a publicly owned motor vehicle that such vehicle

³² Alabama, Arkansas, California, Delaware, Minnesota, Ohio, Pennsylvania, South Dakota, and Wisconsin.

³³ Alabama, Arkansas, California, Delaware, Minnesota, and South Dakota.

³⁴ Arkansas, California, Delaware, Minnesota, Pennsylvania, and South Dakota.

³⁵ Arkansas, California, Delaware, Minnesota, Ohio, Pennsylvania, South Dakota, and Wisconsin.

³⁶ Arkansas, California, Minnesota, Ohio, Pennsylvania, and South Dakota.

was operated by the police while engaged in official duties, or by firemen while proceeding to or extinguishing a fire, or while answering any other emergency alarm. Minnesota authorizes municipalities to indemnify police- and fire-department employees against liability arising out of the operation of motor vehicles by such employees while in the performance of their duties. Arkansas has prescribed by statute rules of procedure that must be followed in the presentation of claims against the State or any public corporation therein, and four States³⁷ have expressly authorized public corporations to carry insurance against liability arising from the operation of motor vehicles.

LIABILITY OF OWNER OF MOTOR VEHICLE DRIVEN BY ANOTHER WITH OWNER'S EXPRESS OR IMPLIED CONSENT

Eight States³⁸ have adopted legislation whereby the negligence or willful misconduct of any person operating a motor vehicle with the express or implied permission of the owner shall be imputed to said owner to render him civilly liable to the same extent as the operator, subject to certain limitations as to the amount of damages recoverable. Most of these States limit the liability of the owner under such circumstances to \$5,000 for the injury or death of one person and \$10,000 for the injury or death of all persons involved in any one accident and to \$1,000 for property damage in a single accident. Such limitations, however, do not apply with respect to the liability of an owner for the negligence or willful misconduct of an agent or servant operating a motor vehicle within the scope of his employment.

Legislation has been enacted in six States³⁹ explicitly making the owner liable for damages resulting from the operation of his motor vehicle by a licensed or unlicensed minor with his consent.

The above type of legislation nowhere operates to relieve the operator of a motor vehicle from the primary liability for his own negligence. In fact, four States⁴⁰ have expressly provided in their automobile civil liability laws that the owner shall be subrogated as to judgments for damages resulting from the operation of his motor vehicle by another and that such owner may recover from the negligent operator to the extent he has been compelled to pay any such judgment.

LIABILITY TO GRATUITOUS GUESTS

There are at present 27 States⁴¹ that have legislation limiting the liability of the owner or operator of a motor vehicle to a gratuitous guest injured while riding in such vehicle to cases of gross negligence, wanton or reckless disregard of the rights of others, willful misconduct, or intoxication on the part of such operator or owner.

³⁷ Arkansas, California, Minnesota, and New Jersey.

³⁸ California, Iowa, Michigan, Minnesota, New York, Rhode Island, Tennessee, and the District of Columbia.

³⁹ Idaho (applies only to minors under 16 years), Kansas (under 16), Maine (under 18), Pennsylvania (under 16), Utah (under 18), and Virginia (under 16).

⁴⁰ Arizona, California, New York, and Pennsylvania.

⁴¹ Alabama, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Michigan, Montana, Nebraska, Nevada, New Mexico, North Dakota, Ohio, Oregon, South Carolina, South Dakota, Texas, Utah, Vermont, Washington, and Wyoming.

These limitations do not apply in seven States⁴² while a motor vehicle is being demonstrated to a prospective buyer.

In 24 States⁴³ the owner cannot claim this statutory exemption from liability if he is guilty of gross negligence or of wanton or reckless disregard of the rights of others; in another group of 24 States⁴⁴ if he is guilty of willful misconduct; and in 9 States⁴⁵ if he is driving while under the influence of intoxicating liquor.

SERVICE OF PROCESS ON NONRESIDENTS

Forty-one States⁴⁶ have enacted laws making the operation of a motor vehicle by a nonresident, or by his agent or employee,⁴⁷ upon the highways of the State equivalent to the appointment, by such nonresident, of the motor-vehicle commissioner, or some other designated State official, as his agent or attorney to accept service of process in any action growing out of the operation of a motor vehicle upon the highways of that State by such nonresident.

The usual procedure in this substituted service of process is to leave a copy of the summons and complaint with the proper State official who will receive it upon payment of a fee ranging from \$1 in Texas to \$3 in Alabama. The fee in 32 States⁴⁸ is \$2.

Process must be served in 26 States⁴⁹ upon the Secretary of State; in North Dakota upon the commissioner of insurance; in Massachusetts upon the registrar of motor vehicles; in Minnesota, Texas, and West Virginia,⁵⁰ upon the commissioner of highways; in North Carolina and Pennsylvania upon the department of revenue; and in the other States⁵¹ upon the motor-vehicle commissioner or corresponding officer.

In a few States⁵² a bond must be filed by the plaintiff in an action against a nonresident, conditioned to reimburse the defendant for any expenses incurred by him in defending the action if the plaintiff

⁴² Arkansas, Idaho, Indiana, Montana, New Mexico, Texas, and Washington.

⁴³ California, Colorado, Connecticut, Delaware, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Michigan, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, and Wyoming.

⁴⁴ Alabama, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Kansas, Michigan, Nebraska, Nevada, New Mexico, North Dakota, Ohio, Oregon, South Carolina, South Dakota, Texas, Utah, Vermont, Washington, and Wyoming.

⁴⁵ California, Colorado, Iowa, Nebraska, Nevada, North Dakota, Oregon, Utah, and Wyoming.

⁴⁶ Alabama, Arkansas, California, Connecticut, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Virginia, Vermont, Washington, West Virginia, Wisconsin, Wyoming, and the District of Columbia. Unofficial information has been received that the 1937 Legislatures of Colorado, Georgia, and Montana have enacted laws providing for substituted service of process on nonresidents. Since the texts of these laws were not available, they have not been included in this analysis.

⁴⁷ This qualification applies only in Arkansas, California, Connecticut, Delaware, Florida, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, Texas, Vermont, West Virginia, Wyoming, and the District of Columbia.

⁴⁸ Arkansas, California, Connecticut, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Tennessee, Vermont, Washington, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

⁴⁹ Alabama, Arkansas, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Mississippi, Nebraska, New York, Ohio, Oklahoma, Oregon, South Dakota, Tennessee, Vermont, Washington, Wisconsin, and Wyoming.

⁵⁰ Unofficial information indicates that this function was transferred to the State auditor by the 1937 Legislature of West Virginia.

⁵¹ California, Connecticut, New Hampshire, New Jersey, Rhode Island, South Carolina, Virginia, and the District of Columbia.

⁵² Illinois, Maine, West Virginia, and the District of Columbia.

fails to win his case. This bond is set at \$500 in Illinois and West Virginia, \$100 in Maine, while in the District of Columbia it rests in the discretion of the court to fix the amount of such bond.

All States,⁵³ except South Dakota and Minnesota, that have adopted legislation regulating the service of process on nonresidents, require that the defendant shall be notified by registered mail of the action instituted against him. In the two excepted States, notice of such action forwarded by ordinary mail is sufficient.

In 19 States⁵⁴ such notice and a copy of the complaint and summons may be served personally upon the defendant wherever found outside the State by any public officer qualified to serve process in the jurisdiction where the defendant is found.

In 33 States⁵⁵ proof of service on the defendant by registered mail is made by affidavit of the plaintiff, or of the State official on whom a copy of the process is served, and it generally must be accompanied by a return receipt of the United States post office showing delivery of the registered letter to the defendant. In five States⁵⁶ an affidavit of compliance will suffice and no post-office return receipt is necessary while in four others⁵⁷ the post-office return receipt is a sufficient proof of service without a supporting affidavit.

Thirty-seven of the States⁵⁸ which sanction substituted service of process provide that all necessary continuances shall be allowed to afford the defendant a reasonable opportunity to appear and answer the complaint.

LIABILITY OF OWNERS OF "FOR-RENT" VEHICLES

In six States⁵⁹ any person planning to enter the business of renting motor vehicles without drivers, commonly referred to as the "U-Drive-It Car Business," must notify the motor vehicle department of such intention.

Proof of financial responsibility or a public liability insurance policy is required in eight States⁶⁰ before a person is permitted to engage in the business of renting motor vehicles without drivers. In Nebraska, owners of "for-rent" automobiles must file with the State railway commission an insurance policy or surety bond in such sum and under such terms as may be approved by the commission.

Liability under such policies is generally limited to \$5,000 to one person and \$10,000 to all persons for personal injury or death and to \$1,000 for damage to property, resulting from any one accident. In Illinois, liability is restricted to \$2,500 per vehicle kept for rental purposes. Three States⁶¹ do not require that the insurance policy

⁵³ See note 46 for these States.

⁵⁴ Alabama, California, Florida, Idaho, Iowa, Kansas, Louisiana, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Oregon, Rhode Island, Texas, Washington, Wyoming, and the District of Columbia.

⁵⁵ Alabama, Arkansas, California, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Mississippi, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Oregon, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, Wisconsin, and Wyoming.

⁵⁶ Illinois, Nebraska, Vermont, Wisconsin, and Wyoming.

⁵⁷ Ohio, Pennsylvania, Washington, and West Virginia.

⁵⁸ Alabama, Arkansas, California, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, Wyoming, and the District of Columbia.

⁵⁹ Arizona, Delaware, Illinois, Kentucky, Nevada, and Wisconsin.

⁶⁰ Arizona, Colorado, Delaware, Illinois, Massachusetts, Nevada, New Jersey, and Wisconsin.

⁶¹ Delaware, Illinois, and Massachusetts.

shall cover liability to passengers in rented vehicles. Arizona provides for joint and several liability of the owner and the person renting an automobile, or others operating with his permission, for damage to passengers unless the owner has given the person renting the vehicle written notice that his insurance policy does not cover such passengers.

In five States ⁶² it is a misdemeanor for the person renting a motor vehicle to permit its operation by another. The courts of three States ⁶³ are required to dismiss actions against the owner of a "for-rent" vehicle upon a showing that liability insurance is maintained in favor of the operator of such vehicle. Registration of a "for-rent" vehicle will not be granted in five States ⁶⁴ unless liability insurance has been obtained or proof of financial responsibility is given. In Minnesota such proof of financial responsibility or liability insurance is required only after a judgment or conviction because of an accident resulting from the operation of such "for-rent" motor vehicles.

Liability insurance is not required from the owner of "for-rent" vehicles in seven States ⁶⁵ if he can demonstrate financial ability to respond in damages within the limits prescribed by law. These limits are generally \$5,000 for the injury or death of one person and \$10,000 for the injury or death of all persons in one vehicle involved in any one accident, and \$5,000 for each vehicle available for rent in excess of one, but not exceeding \$100,000 in all.

Five States ⁶⁶ explicitly deny a right of action to passengers in rented vehicles against the owners thereof. In six States ⁶⁷ the owner of "for-rent" vehicles is jointly liable with the driver thereof for damages occasioned by the driver's negligence if such owner does not carry insurance protection in favor of such driver. Nine States ⁶⁸ cancel the registration of such "for-rent" vehicles upon ascertaining that the owner has not complied with the requirements of law as to liability insurance. Illinois provides that if the insurance or bond becomes inoperative or expires, it shall be unlawful to rent motor vehicles thereafter.

LAWS RELATING TO PROOF OF FINANCIAL RESPONSIBILITY OF MOTOR-VEHICLE OPERATORS

WHEN PROOF OF FINANCIAL RESPONSIBILITY IS REQUIRED

Laws providing for some proof of the financial responsibility of motor vehicle operators have been enacted in 30 States ⁶⁹ since 1925. Nineteen of these States ⁷⁰ require proof in the following cases:

(a) From persons convicted of serious violations of the motor vehicle laws.

⁶² Alabama, Kentucky, Massachusetts, Nevada, and New Jersey.

⁶³ Colorado, Delaware, and Nevada.

⁶⁴ Arizona, Delaware, Massachusetts, Nevada, and Wisconsin.

⁶⁵ Arizona, Connecticut, Delaware, Minnesota, Montana, Rhode Island, and Wisconsin.

⁶⁶ Colorado, Delaware, Illinois, Massachusetts, and Nebraska.

⁶⁷ Delaware, Maine, Nevada, New Hampshire, Rhode Island, and Wisconsin.

⁶⁸ California, Connecticut, Delaware, Indiana, Massachusetts, Minnesota, Nevada, New Hampshire, and Rhode Island.

⁶⁹ Arizona, California, Colorado, Connecticut, Delaware, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Vermont, Virginia, West Virginia, Wisconsin, and the District of Columbia.

⁷⁰ California, Colorado, Delaware, Indiana, Kentucky, Maryland, Michigan, Minnesota, Montana, Nebraska, New Jersey, New York, Ohio, Oregon, Pennsylvania, Vermont, West Virginia, Wisconsin, and the District of Columbia.

(b) From persons who, within a statutory period, have failed to satisfy any final judgment in amounts and upon causes of action specified by law.

The offenses against the motor-vehicle laws, conviction of which makes the offender subject to the financial responsibility laws, vary considerably but the most serious of such offenses specified in a large majority of the States which have such laws are the following:

1. Manslaughter or negligent homicide resulting from the operation of a motor vehicle.

2. Driving while under the influence of intoxicating liquor or narcotic drugs.

3. Any felony in the commission of which a motor vehicle is used.

4. Failure to stop, render aid, and disclose identity, as required by law, after being involved in an accident resulting in the injury or death of any person.

5. Reckless operation of a motor vehicle.

In the 19 States referred to above and in 7 others,⁷¹ an operator's or chauffeur's driving privileges are also suspended upon nonpayment of a final judgment exceeding an amount fixed by law. Such judgment must, in most States, exceed \$100 and remain unpaid for 30 days before the State may proceed to suspend the delinquent defendant's driving privileges. Such suspension remains in effect until the judgment is satisfied, or stayed, and the judgment debtor gives proof of future financial responsibility.

The sizes and types of judgment, nonpayment of which necessitates the posting of proof of financial responsibility, are shown by States in the accompanying table 4.

A graphic presentation of the types of financial responsibility laws in effect in various States is given in figure 1.

⁷¹ Arizona, Iowa, Maine, Massachusetts, North Carolina, South Dakota, and Virginia.

TABLE 4.—States requiring proof of financial responsibility upon nonpayment of a judgment growing out of the ownership, use, or operation of a motor vehicle

State	For nonpayment of judgment							Disregard judgments of other jurisdictions, although proof is required upon nonpayment of domestic judgments	Require payment of judgments in full before restoration of suspended privileges	Permit payment of judgments in installments	Suspend both operating and registration privileges upon nonpayment of judgment	Provide for notifying other jurisdictions of nonpayment of judgments against their residents		
	In any amount	Exceeding \$100	Exceeding \$200	For personal injury or death or property damage in excess of \$100	For bodily injury or death or property damage in excess of \$50	For personal injury or death or property damage exceeding \$75	For bodily injury or death or property damage in excess of \$300						Of other jurisdictions in the United States	Of other jurisdictions either in United States or Canada
Arizona.....				X				X		X	X	X		
California.....				X				X		X	X	X	X	
Colorado.....				X										
Delaware.....		X				X			X				X	
Indiana.....														
Iowa.....	X							X		X	X	X	X	
Kentucky.....	X													
Maine.....	X													
Maryland.....					X				X		X	X	X	
Massachusetts.....					X									
Michigan.....														
Minnesota.....							X							
Montana.....				X				X						
Nebraska.....				X				X		X	X	X	X	
New Jersey.....	X									X	X	X	X	
New York.....				X										
North Carolina.....				X										
Ohio.....									X	X	X	X	X	
Oregon.....				X										
Pennsylvania.....	4 X		X						X	X	X	X	X	
South Dakota.....	X								X	X	X	X	X	
Vermont.....	X								X	X	X	X	X	
Virginia.....	X							X						
West Virginia.....					X									
Wisconsin.....	X									X	X	X	X	
District of Columbia.....														
Total.....	9	1	1	10	3	1	1	6	11	9	11	15	25	13

¹ Judgment creditor must agree to such payment.² Judgment debtor has option of paying in full or installments or furnishing proof of financial responsibility.³ Refers to property damage only and supplements the State compulsory insurance law.⁴ Ohio requires that the judgment be caused by such person's "individual operation" of an automobile.

certificate issued to him until such judgment is satisfied and proof of future financial responsibility is furnished.

The fundamental difference between the law of Arizona and that of Virginia or North Carolina is that while in the latter two States the judgment debtor can either satisfy the outstanding judgment or give proof of future financial responsibility, in Arizona he must satisfy the judgment and also give proof of ability to respond to future damages before restoration of his operating privileges.

Connecticut requires proof upon conviction of certain offenses specified in the statute or when the operator's record is such that the commissioner deems it necessary to require evidence of financial responsibility for the reasonable protection of other persons. The most serious offenses, conviction for which makes the posting of proof of financial responsibility necessary, are:

1. Operating a public service motor vehicle without first having obtained the special license provided by law.

2. Reckless driving.

3. Racing on the highway or evading responsibility by failure to stop, render assistance, and disclose identity, after being involved in an accident resulting in the injury or death of any person.

4. Failure to give name and show license upon the lawful request of a police officer while in uniform or any other person with legal authority to make such request.

5. Operating a motor vehicle while under the influence of intoxicating liquor or narcotic drugs.

6. Failure to come to a full stop within 10 feet from the rear of a street railway car that has halted to receive or discharge passengers.

7. Leaving a motor vehicle stationary upon the highway with its engine running and unoccupied by a person able to control the same without setting the brake so as to prevent the automobile from moving.

8. Using a motor vehicle without the owner's permission.

9. False swearing to any oath or affirmation required by the motor vehicle laws.

10. Improper use of any number plate, marker, registration certificate, or license.

11. When an operator is held responsible for an accident resulting in the death or injury of any person.

In Rhode Island and North Dakota any operator convicted of certain specified offenses is required to give proof of financial responsibility for future damage.

Massachusetts has enacted a law relating to property damage to supplement its compulsory insurance legislation which covers only liability for death or bodily injury. This supplementary law does not provide for proof of financial responsibility after a person is involved in an automobile accident, but apparently is designed to compel a defendant, in any action brought within the Commonwealth to recover damages for injury to property arising out of the use, operation, or maintenance of any motor vehicle, to pay any final judgment rendered against him or suffer the penalty of suspension of driver's license and registration certificate if such final judgment is not satisfied within 60 days after it is entered.

It is provided in Iowa that the driving and registration rights of anyone who has failed to satisfy a final judgment for injury to

or death of any person or for damage to property within 60 days after the entry of such judgment, shall be suspended until the judgment debtor can prove that such judgment has been satisfied, stayed, or otherwise discharged. The Iowa law does not require proof of financial responsibility to respond for future damage.

New Hampshire provides for the revocation of the license of a driver after an accident if the motor vehicle commissioner or a justice of the superior court shall find, upon investigation or hearing, that said accident was probably due, in whole or in part, to the negligence of such operator and not due, in whole or in part, to the negligence of the other operator; and if said operator, upon being found probably liable is unable to furnish such security as shall seem to the court to be proper for the payment within 30 days after rendition of any final judgment of that portion of such judgment as shall not exceed \$5,000 for bodily injuries or death and \$1,000 for damage to property. The owner's license and registration may also be revoked if the vehicle was being operated with his express or implied consent.

Maine and South Dakota require proof of financial responsibility after conviction of certain offenses among which are reckless driving, operating while under the influence of intoxicating liquor or drugs, failure to stop and disclose identity after being involved in an accident resulting in personal injury or property damage; but not after a civil judgment, although upon nonpayment of any such judgment the department suspends the licensee's driving privileges.

Pennsylvania requires proof of financial responsibility from persons with certain poor accident records, without reference to any conviction or unsatisfied judgment, and from any driver whose license has been suspended or revoked under any provision of the motor vehicle law.

Like proof is required in Rhode Island after the motor vehicle administration department ascertains that a person involved in an accident has violated any of certain named provisions of law. It also requires proof for all automobiles registered in the name of a minor. Connecticut has enacted a similar provision concerning minors and prohibits any minor from driving an uninsured vehicle.

New Jersey will exempt an owner or operator from furnishing the required proof after being involved in an accident which causes damages of over \$100 if, in the opinion of the motor vehicle commissioner, such operator was not at fault.

PROOF REQUIRED UPON CONVICTIONS FOLLOWED BY SUSPENSION OF LICENSE

Six States⁷² require proof of future responsibility from persons convicted of offenses for which revocation of the operator's permit under the drivers' license laws of the State is made mandatory.

EFFECT OF PLEA OF GUILTY TO VIOLATIONS OF MOTOR VEHICLE LAWS

Proof of responsibility is required in 11 States⁷³ from persons who plead guilty to offenses for which the law requires revocation

⁷² Colorado, Indiana, Kentucky, Michigan, Oregon, and Pennsylvania.

⁷³ Colorado, Indiana, Kentucky, Maryland, Michigan, Nebraska, New York, Ohio, Oregon, West Virginia, and Wisconsin.

of drivers' licenses or to charges of certain other designated offenses against the motor vehicle laws.

Rhode Island requires like proof from persons who have entered a plea of *nolo contendere* to specified charges, while Connecticut makes a similar requirement of those against whom charges of certain offenses have been nol-prossed upon payment of money or those who have received a suspended sentence.

Fifteen States⁷⁴ require such proof from persons who forfeit bail upon charges of violating designated motor vehicle laws.

EFFECT OF CONVICTION IN ANOTHER STATE

In four States⁷⁵ proof of responsibility is required from persons convicted of certain violations of the motor-vehicle laws of other States of the United States or who have indicated by their conduct, after being formally accused of such offenses, the probability of their guilt. Eleven other States⁷⁶ have the same provisions applicable to cases arising in the United States but go further and extend them to Canada as well. There are, however, nine States⁷⁷ which expressly provide that conviction of a motor vehicle law violation in another jurisdiction shall not be grounds for requiring proof of financial responsibility.

PROOF REQUIRED FROM NONRESIDENTS

Twenty-four States⁷⁸ require such proof from nonresidents who are therein convicted or otherwise deemed guilty of certain charges of motor vehicle law violations. Fourteen States⁷⁹ have legislation providing that when a nonresident is convicted therein, the proper authorities of the State issuing the license of such nonresident shall be notified.

EFFECTIVE DATE OF REVOCATION OF LICENSE

Fifteen States⁸⁰ summarily and immediately suspend both driving and registration rights after conviction until proof of financial responsibility is furnished. In 10 States⁸¹ a period of grace is given in which to comply with the required proof before operation and registration rights are taken away and in four States⁸² only the personal right to operate a motor vehicle is suspended upon failure to furnish such proof after conviction. Maine will suspend only the registration of the vehicle involved. Rhode Island requires such proof both from the person convicted of a motor vehicle law violation and the owner of the automobile involved in such violation.

⁷⁴ Colorado, Connecticut, Indiana, Kentucky, Maryland, Michigan, Minnesota, Montana, Nebraska, New Jersey, New York, Oregon, West Virginia, Wisconsin, and the District of Columbia.

⁷⁵ Connecticut, Nebraska, Rhode Island, and the District of Columbia.

⁷⁶ Colorado, Indiana, Kentucky, Michigan, Minnesota, Montana, New Jersey, New York, Oregon, West Virginia, and Wisconsin.

⁷⁷ California, Delaware, Maine, Maryland, North Dakota, Ohio, Pennsylvania, South Dakota, and Vermont.

⁷⁸ California, Colorado, Connecticut, Delaware, Indiana, Kentucky, Maine, Maryland, Michigan, Minnesota, Montana, Nebraska, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Vermont, West Virginia, Wisconsin, and the District of Columbia.

⁷⁹ Colorado, Delaware, Indiana, Kentucky, Maryland, Michigan, Minnesota, Montana, Nebraska, New York, Oregon, Rhode Island, West Virginia, and Wisconsin.

⁸⁰ Colorado, Indiana, Kentucky, Maryland, Michigan, Minnesota, Montana, Nebraska, New York, Ohio, Oregon, Virginia, West Virginia, Wisconsin, and the District of Columbia.

⁸¹ Arizona, Connecticut, Delaware, Iowa, Massachusetts, New Hampshire, New Jersey, North Carolina, Rhode Island, and Vermont.

⁸² California, North Dakota, Pennsylvania, and South Dakota.

OWNER MAY GIVE PROOF FOR CHAUFFEUR

Thirteen States ⁸³ permit restoration, within certain limitations, of the driving rights of a chauffeur or member of the family of a motor vehicle owner who furnishes proof of the responsibility of such operator whose license has been revoked. In such event the chauffeur or member of the family is generally authorized to drive only the vehicle or vehicles that are covered by the proof of financial responsibility furnished by such owner.

AMOUNT OF PROOF REQUIRED

In 23 States ⁸⁴ a showing of ability to respond in damages to the amount of \$1,000 for property damage, \$5,000 for the bodily injury or death of one person, and \$10,000 for the injury or death of all persons involved in any one accident is considered adequate proof of financial responsibility.

North and South Dakota require a bond for \$2,000 conditioned to pay all lawful claims for bodily injury, death, or property damage, resulting from negligent driving.

Connecticut requires proof of ability to respond in damages resulting from any one accident in the amount of \$10,000 for all injuries and deaths and \$1,000 for property damage.

Delaware and Maine limit the amount required to \$5,000 for personal injuries or death and \$1,000 for damage to property resulting from a single accident.

In Massachusetts proof in the sum of \$1,000 is required to assure responsibility for damage to property.

Montana requires proof of financial responsibility in the amounts of \$500 for the injury or death of one person, \$1,000 for the injury or death of all persons involved, and \$250 for property damage in any one accident.

DAMAGES INCURRED IN A FOREIGN STATE

Thirteen States ⁸⁵ have laws which cover claims for damages originating either within their own borders or in a foreign jurisdiction.

INSURANCE CARRIED IN A FOREIGN STATE

Eight States ⁸⁶ permit nonresidents, when proof of financial responsibility is required of them, to furnish a certificate of a foreign insurance company not admitted to transact business within the State on condition that the policy be amended to conform to the law of the State and provide for substituted service of process on the insurance

⁸³ Colorado, Indiana, Kentucky, Maryland, Michigan, Minnesota, Montana, Nebraska, New Jersey, New York, Oregon, West Virginia, and the District of Columbia.

⁸⁴ Arizona, California, Colorado, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia, Wisconsin, and the District of Columbia.

⁸⁵ Arizona, Colorado, Indiana, Kentucky, Maryland, Michigan, Minnesota, New Hampshire, Ohio, Oregon, Pennsylvania, West Virginia, and Wisconsin.

⁸⁶ Colorado, Delaware, Indiana, Kentucky, Michigan, Montana, Oregon, and the District of Columbia.

company; while in 4 other States⁸⁷ the certificate of a nonadmitted insurance company is accepted as proof without any further condition. Six States⁸⁸ limit this privilege to persons from States that reciprocally grant similar privileges to the citizens of the enacting State.

LENGTH OF TIME PROOF MUST BE MAINTAINED

In 8 States⁸⁹ proof of financial responsibility must be maintained for 3 years unless the person furnishing it has been convicted of certain statutory offenses during that period, in which case it shall be maintained indefinitely.

In 11 States⁹⁰ such proof is required to be maintained for 3 years and may be released thereafter if no conviction of a motor vehicle offense or judgment has been rendered or no motor vehicle accident suit is pending against the person concerned.

Ohio and Rhode Island require that such proof shall be maintained for 1 year, North Dakota and South Dakota for 2 years, Nebraska for 5 years, and Arizona, California, Iowa, Massachusetts, New Hampshire, and Virginia for an indefinite period.

NOTICE REQUIRED OF CANCELATION OF INSURANCE POLICY

Legislation has been enacted in 9 States⁹¹ requiring that insurance companies shall notify the officials charged with administering the motor vehicle laws of the expiration or cancellation of any policy issued as proof of ability to respond in damages to any owner or operator of a motor vehicle who, by reason of having been involved in an accident or having failed to pay a judgment, has been compelled to offer proof of financial responsibility.

METHODS BY WHICH PROOF MAY BE GIVEN

Proof of future financial responsibility may be given in several ways in each of the States that require it. Among the most popular approved methods are a certificate of an insurance company that it has issued an automobile liability policy to the person offering proof, a surety bond executed by an approved corporate surety, a bond with individual sureties, and the deposit of cash or securities with the proper agency. The methods that are approved in each State are shown in table 5.

⁸⁷ Arizona, Minnesota, Ohio, and Pennsylvania.

⁸⁸ Maryland, Montana, New Jersey, North Carolina, West Virginia, and Wisconsin.

⁸⁹ Colorado, Indiana, Kentucky, Maryland, Michigan, Oregon, West Virginia, and Wisconsin.

⁹⁰ Connecticut, Delaware, Maine, Minnesota, Montana, New Jersey, New York, North Carolina, Pennsylvania, Vermont, and the District of Columbia.

⁹¹ Connecticut, Indiana, Maryland, Minnesota, Montana, North Carolina, Pennsylvania, West Virginia, and Wisconsin.

TABLE 5.—*Methods by which proof of financial responsibility may be offered in different States*

State	Certificate of insurance company that it has issued an automobile insurance policy	Surety bond executed by surety company	Bond with individual sureties, constituting a lien on real estate	Deposit of cash	Deposit of securities	Annual financial statement showing ability to meet claims not exceeding \$20,000	Proof showing possession of resources sufficient to satisfy liability of \$6,000	Bond with surety company or individuals approved by the clerk of the court where the person was convicted
Arizona.....	x	x	x	x	x			
California.....	x	x	x	x				
Colorado.....	x	x	x	x	x			
Connecticut.....	x	x	x	x	x			
Delaware.....	x	x	x	x	x		x	
Indiana.....	x	x	x	x	x			
Iowa ¹								
Kentucky.....	x	x	x	x	x			
Maine.....	x	x	x	x	x			
Maryland.....	x	x	x	x	x			
Massachusetts ²								
Michigan.....	x	x	x	x	x			
Minnesota.....	x	x	x	x	x			
Montana.....	x	x	x	x	x			
Nebraska.....	x	x		x				
New Hampshire.....	x	x		x				
New Jersey.....	x	x	x	x	x			
New York.....	x	x	x	x	x			
North Carolina.....	x	x		x	x			
North Dakota.....								x
Ohio.....	x	x	x	x	x			
Oregon.....	x	x	x	x	x			
Pennsylvania.....	x	x		x				
Rhode Island.....	x	x				x		
South Dakota.....								x
Vermont.....	x	x						
Virginia.....	x	x						
West Virginia.....	x	x	x					
Wisconsin.....	x	x	x	x	x			
District of Columbia.....	x	x	x	x				
Total.....	26	26	19	22	17	1	1	2

¹ Iowa does not require proof of financial responsibility but suspends operating privileges if a judgment remains unsatisfied after 60 days from date it was entered.

² Requires compulsory insurance against liability for bodily injury or death as a prerequisite to registration. Requires no proof of financial responsibility to answer for property damage but a judgment must be satisfied within certain limits or operating privileges will be suspended.

LAWS RELATING TO TRAFFIC ON THE HIGHWAYS

SCOPE OF THE TRAFFIC LAWS

The statutes of 45 States,⁹² in general terms, require obedience to all the traffic laws of the State, and in 42 States⁹³ to the commands of police officers as well. In Mississippi, Missouri, and Nebraska obedience is specifically required to all the traffic laws, but not to the orders of police officers. Refusal to comply with any provision of law that has no specific penalty attached is generally made a misdemeanor. Three States⁹⁴ have no such general statute but provide an individual penalty for each offense against the traffic laws.

⁹² Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

⁹³ Same as note 92, except for Mississippi, Missouri, and Nebraska.

⁹⁴ Florida, Georgia, Wyoming.

Compliance with the traffic laws is specifically required of bicycle riders in 25 States⁹⁵ and of persons riding horses along the highways in a few States.

The driver of an authorized emergency vehicle may disregard the traffic laws in all but 9 States.⁹⁶

POWERS OF LOCAL AUTHORITIES

Every State delegates some measure of authority to local enforcement officers over traffic within their respective jurisdictions. The power to regulate the movement of traffic by officers or automatic signals is expressly given in 42 States,⁹⁷ and by designating arterial highways in all except 8 States.⁹⁸ One-way streets may be prescribed in all but 6 States.⁹⁹

The right to establish limitations on the size and weight of vehicles at variance with those fixed by the State is given to county or municipal authorities in 19 States¹ and expressly denied them in 9 States,² while 21 States³ have no legislation on this subject.

The power of local authorities to vary State-wide speed limits is discussed in the section on speed limits on page 88.

TRAFFIC CONTROL DEVICES

The motor-vehicle department, or corresponding body, is authorized to adopt a manual of uniform traffic-control devices in 27 States⁴ and, in all of these States and 9 others,⁵ may place such devices wherever it shall consider them necessary to regulate traffic. The laws of Alabama and Idaho require that such devices conform as nearly as possible to the systems adopted in other States. All but 10 States⁶ permit local authorities to erect control devices within their respective jurisdictions. In New Jersey local authorities cannot erect traffic signals themselves but may request the State highway commission to do so at dangerous intersections within their boundaries.

⁹⁵ Arizona, California, Colorado, Connecticut, Idaho, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Mexico, North Dakota, Oregon, Pennsylvania, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, and the District of Columbia.

⁹⁶ Alabama, Florida, Georgia, Mississippi, Montana, Nebraska, Nevada, New Jersey, and Ohio.

⁹⁷ All States except Florida, Georgia, Mississippi, Nevada, Ohio, Oklahoma, and Washington.

⁹⁸ Florida, Georgia, Mississippi, Nevada, North Carolina, Oklahoma, Virginia, and Wyoming.

⁹⁹ Florida, Georgia, Mississippi, Nevada, Oklahoma, and Wyoming.

¹ Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Missouri, Montana, New Hampshire, New Mexico, New York, Oregon, Pennsylvania, Texas, and Utah.

² California, Connecticut, Delaware, Minnesota, Rhode Island, South Dakota, Tennessee, West Virginia, and Wisconsin.

³ Arizona, Colorado, Idaho, Maine, Maryland, Massachusetts, Michigan, Mississippi, Nebraska, Nevada, New Jersey, North Carolina, North Dakota, Ohio, Oklahoma, South Carolina, Vermont, Virginia, Washington, Wyoming, and the District of Columbia.

⁴ Alabama, Arizona, Arkansas, Colorado, Idaho, Illinois, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Oregon, Pennsylvania, Texas, Utah, Virginia, West Virginia, and the District of Columbia.

⁵ California, Connecticut, Delaware, Indiana, Iowa, Kansas, South Carolina, South Dakota, and Wisconsin.

⁶ Georgia, Kentucky, Maine, Mississippi, Missouri, Nevada, New York, Oklahoma, Wyoming, and the District of Columbia.

Erection of unauthorized or imitation traffic controls is prohibited in 30 States,⁷ and in 33 States⁸ interference with or damage to highway-traffic devices is made a misdemeanor.

Twenty-two States⁹ have enacted laws which prescribe to a greater or less degree the meaning of traffic light signals. A red light, shining alone, means that traffic is to stop outside the nearest crosswalk in all of these States. A variation of this rule has been adopted in two States,¹⁰ which permits a right turn to be made against the red light. Ten States¹¹ authorize the combination of a red light and a green arrow, which permits vehicles to enter the intersection against the red light, but only to move as directed by the arrow.

New York State authorizes this combination to permit a right turn after coming to a complete stop. An intermittently flashing red signal is recognized in the laws of 10 States,¹² in all of which a complete stop must be made before proceeding across intersections so controlled. Similarly, in 14 States¹³ a flashing yellow signal indicates caution is necessary in passing through the intersection. In 19 States¹⁴ a yellow signal, shown in conjunction with green, commands vehicles to stop if this can be done in safety. In Michigan all vehicles must stop when this signal appears, and no discretion to pass through the intersection is given. In 15 States¹⁵ pedestrians are warned by this signal that there is insufficient time to cross the street and that they must remain on the sidewalk. In Illinois pedestrians may cross while the yellow light shows, but must yield the right-of-way to all vehicles. Yellow is shown together with red in Massachusetts to indicate a period during which the intersection is reserved for the exclusive use of pedestrians. A green light in 16 States¹⁶ indicates that traffic is to proceed through the intersection, or turn right or left at will. The right-of-way, however, must be yielded to vehicles lawfully in the intersection when the green light appears. In 21 States¹⁷ pedestrians must wait for the green light at intersections, then proceed within the proper crosswalks, according to the rules discussed under the heading "Pedestrians" on page 100.

⁷ Arizona, Arkansas, California, Colorado, Connecticut, Georgia, Idaho, Illinois, Louisiana, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, and Wisconsin.

⁸ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Illinois, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Utah, Virginia, West Virginia, Wisconsin, and the District of Columbia.

⁹ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Illinois, Massachusetts, Michigan, Minnesota, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Virginia, Wisconsin, and the District of Columbia.

¹⁰ Arkansas and Utah. Many municipalities also authorize this movement.

¹¹ Colorado, Connecticut, Illinois, Massachusetts, Minnesota, New Jersey, Pennsylvania, Rhode Island, Virginia, and the District of Columbia.

¹² Arkansas, Colorado, Connecticut, Illinois, Massachusetts, New Jersey, Pennsylvania, Rhode Island, Utah, and Virginia.

¹³ Arkansas, California, Colorado, Connecticut, Delaware, Illinois, Massachusetts, New Jersey, New York, Pennsylvania, Rhode Island, Utah, Virginia, and the District of Columbia.

¹⁴ Arkansas, California, Colorado, Connecticut, Delaware, Illinois, Massachusetts, Minnesota, New Jersey, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Virginia, Wisconsin, and the District of Columbia.

¹⁵ Arkansas, California, Colorado, Connecticut, Delaware, Minnesota, New Jersey, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Virginia, Wisconsin, and the District of Columbia.

¹⁶ Arkansas, California, Colorado, Delaware, Illinois, Massachusetts, Michigan, Minnesota, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, and Virginia.

¹⁷ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Minnesota, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Virginia, Wisconsin, and the District of Columbia.

ACCIDENTS

It is specifically provided in every State that the driver of a motor vehicle involved in an accident resulting in death or injury to any person must stop and return to the scene of the accident. In 37 States¹⁸ he is explicitly required to render reasonable assistance to anyone injured, and to aid in getting the injured person to a physician or hospital, if that be necessary.

The operator of a motor vehicle, in 13 States,¹⁹ must stop, return to the scene of any accident, and identify himself to persons present or leave his name and address. In 8 States²⁰ he must do so if he strikes an unattended vehicle, and in 31 States²¹ if he causes any damage to property. The laws of six States²² contain no provision for stopping after an accident when the only damage done by a collision is to an unattended vehicle or to property.

The penalties for conviction of failure to stop are often severe, varying from \$10 to \$5,000 fine, and 30 days' to 5 years' imprisonment, both of which may usually be imposed. In many States²³ an operator's license may be forfeited for this offense.

Upon returning to the scene of a collision, the duties of the operators involved are to a certain extent uniform in the various States. After administering aid to the injured, in the States²⁴ where this is required, each driver must, in every jurisdiction, give his name and address to the other and in all but 11 States²⁵ must show his driver's license, if he comes from a State which requires such license.

Every accident involving death or injury to any person must be reported immediately in 11 States,²⁶ within 24 hours in 20 States,²⁷ and within 48 hours in 3 States,²⁸ while 14 States²⁹ require no report at all. In North Dakota such report need be made only if the accident occurred within a city or town. An accident involving only damage to property must be reported if the apparent damage is over \$100 in 1 State,³⁰ \$50 in 14 States,³¹ \$25 in 4 States,³² and \$10 in 3

¹⁸ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia, and Wisconsin.

¹⁹ Arizona, Arkansas, California, Colorado, Illinois, Iowa, Maine, Maryland, Minnesota, South Carolina, Utah, Washington, and Wisconsin.

²⁰ Arkansas, Colorado, Illinois, Iowa, Maine, Minnesota, Utah, and Wisconsin.

²¹ California, Connecticut, Delaware, Florida, Georgia, Idaho, Indiana, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Vermont, Virginia, Washington, West Virginia, and Wyoming.

²² Kansas, Nevada, New York, Ohio, Oklahoma, and Texas.

²³ Alabama, Arizona, California, Colorado, Connecticut, Delaware, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

(See note 81, p. 52.)

²⁴ See note 18.

²⁵ Florida, Georgia, Indiana, Mississippi, Nevada, New Mexico, Ohio, Oklahoma, Texas, Wyoming, and the District of Columbia.

²⁶ Arizona, Iowa, Kansas, Maine, Massachusetts, Nevada, New Hampshire, New York, Rhode Island, West Virginia, and the District of Columbia.

²⁷ Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Louisiana, Maryland, Minnesota, Nebraska, North Carolina, New Mexico, Oregon, Pennsylvania, South Dakota, Utah, Vermont, Virginia, and Washington.

²⁸ Michigan, New Jersey, and Wisconsin.

²⁹ Alabama, Florida, Georgia, Indiana, Kentucky, Mississippi, Missouri, Montana, Ohio, Oklahoma, South Carolina, Tennessee, Texas, and Wyoming.

³⁰ Rhode Island.

³¹ Arizona, Arkansas, Delaware, Idaho, Louisiana, Maine, Minnesota, Nebraska, New Mexico, North Dakota, Pennsylvania, South Dakota, Utah, and Wisconsin.

³² Connecticut, Iowa, New Jersey, and Washington.

States.³³ In 5 States³⁴ an accident which causes any damage at all must be reported. In Michigan a report is required only if a car is disabled, while in 21 States³⁵ no report is required to be made in cases involving only property damage.

The accident report must always be made to the motor-vehicle department or corresponding agency in 15 States.³⁶ In 11 States³⁷ such report must always be made to the police or sheriff of the locality in which the accident occurred, and in 5 of these States³⁸ a copy is sent to the department by the local authorities. In nine States³⁹ accidents in cities and towns are reported to local authorities and rural accidents are reported directly to the department. The motor-vehicle department or corresponding agency may require supplemental reports in 23 States.⁴⁰ In 10 States⁴¹ witnesses to an accident can be compelled to file a report, while in 14 States⁴² other occupants of vehicles involved in an accident must report if the operator is physically unable to do so.

The department is authorized to prepare accident report forms and distribute them to local authorities on request in 28 States,⁴³ while all accident reports are required to be on such approved forms in 24 States.⁴⁴ Coroners in 12 States⁴⁵ are required to report to the department all deaths resulting from motor-vehicle accidents. In Rhode Island and South Dakota this duty is imposed on local police authorities. In 18 States⁴⁶ garages must report vehicles brought in for repair which bear bullet holes or signs of a serious collision. The reports required to be made in accident cases are expressly declared to be confidential documents, not for public inspection or use, in 23 States.⁴⁷ In 16 States⁴⁸ the department is authorized to tabu-

³³ North Carolina, Vermont, and Virginia.

³⁴ California (to unattended vehicles only), Colorado, Nevada, New York (only if owner of damaged property is not present), and Oregon.

³⁵ Alabama, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Maryland, Massachusetts, Mississippi, Missouri, Montana, New Hampshire, Ohio, Oklahoma, South Carolina, Tennessee, Texas, West Virginia, Wyoming, and the District of Columbia.

³⁶ Arkansas, Connecticut, Illinois, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wisconsin.

³⁷ Arizona, Iowa, Kansas, Michigan, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, and the District of Columbia.

³⁸ Arizona, Michigan, Oregon, South Dakota, and Utah.

³⁹ California, Colorado, Delaware, Idaho, Louisiana, Nebraska, New Mexico, North Carolina, and Virginia.

⁴⁰ Arizona, Arkansas, California, Colorado, Delaware, Idaho, Illinois, Iowa, Louisiana, Maine, Nebraska, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, South Dakota, Utah, Vermont, Virginia, Washington, and Wisconsin.

⁴¹ Arkansas, California, Colorado, Illinois, North Carolina, Oregon, Utah, Virginia, Washington, and Wisconsin.

⁴² Arkansas, California, Colorado, Illinois, Iowa, Maryland (applies only to owner of vehicle), New York, North Carolina, Oregon, Pennsylvania, Utah, Virginia, Washington, and Wisconsin.

⁴³ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho (supplemental reports only), Illinois, Indiana (to police departments), Iowa, Louisiana, Maine, Maryland, Massachusetts (to police departments), Michigan, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Texas (to police departments), Utah, Vermont (supplemental reports only), Virginia, Washington, and Wisconsin.

⁴⁴ Arkansas, California, Colorado, Connecticut, Delaware (supplemental reports only), Idaho (supplemental reports only), Illinois, Indiana (police department reports), Iowa, Louisiana (supplemental reports only), Massachusetts (police department reports), Michigan, New Jersey, New Mexico (supplemental reports only), New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Utah (supplemental reports only), Vermont (supplemental reports only), Virginia, Washington, and Wisconsin.

⁴⁵ Arkansas, California, Colorado, Connecticut, Indiana, Iowa, New Jersey, New York, Oregon, Virginia, Washington, and Wisconsin.

⁴⁶ Arizona, Arkansas, Colorado, Connecticut, Delaware, Idaho, Maine, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, North Dakota, Oregon, Pennsylvania (bullet holes only), South Dakota, Utah, and Virginia.

⁴⁷ Arizona, Arkansas, California, Colorado, Delaware, Idaho, Illinois, Iowa, Louisiana, Maine, Michigan, Nebraska, New Jersey, New Mexico, North Carolina, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Virginia, Washington, and Wisconsin.

⁴⁸ Arizona, Arkansas, California, Colorado, Delaware, Illinois, Iowa, Louisiana, Maine, Maryland, Minnesota, North Carolina, Utah, Virginia, Washington, and Wisconsin.

late, analyze, and publish statistical information compiled from the accident reports which it gathers.

In 14 States⁴⁹ specific penalties are provided for failure to make the requisite accident reports. These penalties generally include fines, which range from \$1 to \$5,000, and imprisonment for terms which vary from 1 day to 5 years. In all the remaining States⁵⁰ that require them, except Massachusetts, failure to submit accident reports is punishable only under a general provision that failure to perform any act for which no penalty is specified shall be a misdemeanor. The penalties which follow conviction of such a misdemeanor include fines of \$1 to \$300 and imprisonment for terms up to 6 months, in various States.

It is generally provided that either a fine or a prison term, or both, may be imposed, and that heavier penalties shall follow upon second or subsequent convictions of failure to report accidents.

In Massachusetts revocation of the operator's license is the only penalty provided, while in Delaware, and on a third conviction in Rhode Island, such revocation must be made. In Maryland, New Jersey, and New York, revocation may be added to the fine or prison sentence.

DRUNKEN DRIVING

The laws of every State make the operation of a motor vehicle by one in an intoxicated condition, or while under the influence of liquor, a criminal offense.

In 43 States⁵¹ it is unlawful to drive while under the influence of intoxicating liquor. In the remaining six States⁵² it is unlawful to drive while in an intoxicated condition. The laws of 13 States⁵³ in the first group contain both provisions.

In 33 States⁵⁴ it is criminal to drive upon the public highways while intoxicated or under the influence of intoxicants, while in 16 States⁵⁵ it is forbidden to operate a motor vehicle anywhere within the State while in either condition. The latter is the broader provision, since it apparently permits conviction for drunken driving on private ways, alleys, and similar places, as well as on the highway.

Efforts have been made in a few States to make less difficult the problem of determining when a motor-vehicle operator is under the influence of liquor. Kansas has provided that the taking or use of any intoxicating liquor or drug, within a reasonable time prior to operation of a motor vehicle, shall be *prima facie* evidence of being under the influence thereof. Oklahoma and South Dakota provide that the having of any intoxicating liquor on or about one's

⁴⁹ California, Connecticut, Delaware, Kansas, Maryland, Massachusetts, Nevada, New Hampshire, Pennsylvania, Rhode Island, Vermont, West Virginia, Wisconsin, and the District of Columbia.

⁵⁰ Arizona, Arkansas, Colorado, Idaho, Illinois, Iowa, Louisiana, Maine, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, New York, North Dakota, Oregon, South Dakota, Utah, Virginia, and Washington.

⁵¹ All States except Iowa, Kentucky, Mississippi, Missouri, New York, and North Dakota.

⁵² Iowa, Kentucky, Mississippi, Missouri, New York, and North Dakota.

⁵³ Florida, Kansas, Louisiana, Maine, Maryland, Montana, Nevada, North Carolina, Ohio, North Dakota, Texas, West Virginia, and Wyoming.

⁵⁴ Alabama, Arizona, California, Colorado, Florida, Georgia, Idaho, Indiana, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nevada, New Hampshire, New Mexico, North Carolina, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Washington, West Virginia, and Wisconsin.

⁵⁵ Arkansas, Connecticut, Delaware, Illinois, Kansas, Maine, Missouri, Nebraska, New Jersey, New York, North Dakota, Pennsylvania, Vermont, Virginia, Wyoming, and the District of Columbia.

person or in the motor vehicle being operated shall be prima facie evidence of a violation of the statute. This provision was held unconstitutional in Oklahoma ⁵⁶ as substituting for factual evidence, to make possible a conviction under a criminal statute, a statutory presumption from which the fact sought to be proved does not necessarily follow.

Washington has recently passed a law making it a misdemeanor to operate a motor vehicle while under the influence of or while affected by intoxicating liquor. In still another State ⁵⁷ no conviction can be had unless it is shown that the accused was informed of his right, given by statute, to be examined immediately upon arrest by his own physician, to determine whether he was intoxicated.

The penalties that follow conviction of driving while intoxicated or while under the influence of intoxicants fall into several classes, the first of which consists of fines and terms of imprisonment. These are shown for the various States in table 6.

⁵⁶ *Simkins v. State* (249 Pac. 168 (Okla.)).

⁵⁷ Rhode Island, Laws of 1934, Ch. 2109.

TABLE 6.—Penalties for operating a motor vehicle while in an intoxicated condition or while under the influence of intoxicating liquor

State	First offense				May both fine and imprisonment be imposed	Second offense ¹				Imprisonment mandatory on this offense	Third offense ¹				Imprisonment mandatory on this offense
	Fine		Imprisonment			Fine		Imprisonment			Fine		Imprisonment		
	Minimum	Maximum	Days	Months		Minimum	Maximum	Minimum	Maximum		Minimum	Maximum	Minimum	Maximum	
Alabama.....	\$100	\$1,000	30	12	Yes	\$200	\$1,000	3	1	Yes			Years		
Arizona.....			30	12	Yes					Yes					
Arkansas.....	100	1,000	10	6	Yes	200	1,000	3	1	Yes					
California.....	50	500	30	12	Yes	1,000		3	1	Yes					
Colorado.....		1,000		6	Yes	1,000		3	1	Yes					
Connecticut.....	100	500		6	Yes			6	1	Yes					
Delaware.....	100	500	30	1	Yes	200	1,000	1	1						
Florida.....	100	500	30	2	Yes										
Georgia.....	100	\$250	30	3	Yes										
Idaho.....	1,000			3	Yes										
Illinois.....	100	300	30	6	Yes			24	5	Yes					
Indiana.....	100	1,000	10	12	Yes		1,000	3	1	Yes					
Iowa.....	300	\$500	30	6	Yes			12	5	Yes					
Kansas.....	1,000			12	Yes	500	1,000		1					3	
Kentucky.....	100	500	30	6	No.										
Louisiana.....	100	500													
Maine.....	50	250	30	4	Yes	100	500	1	1/2	Yes					
Maryland.....	100	1,000	30	11	Yes	100	1,000	3	1	Yes					
Massachusetts.....	100	1,000	30	12	Yes			3	11/12	Yes					
Michigan.....	35	1,000	14	24	Yes			6	2	Yes					
Minnesota.....	50	100		3	Yes		1,000	6	1	Yes					
Mississippi.....	10	100	10	3	No.	25	100	1	1/4						
Missouri.....		100				10	100		1/16						
Montana.....		100		60	Yes										
Nebraska.....	50	300	30	6	Yes	300	1,000	6	3		\$25	\$200	1/12	Yes.	
Nevada.....			5	3	No.						1,000	5,000	3	10	
New Hampshire.....		500			Yes					Yes			1	Yes.	
New Jersey.....	500			6	Yes	100	500	1	1/2	Yes					
New Mexico.....	200	500	30	3	Yes			3	1	Yes					
New York.....	100	1,000	30	12	Yes		1,000	3	1	Yes					
North Carolina.....		100		1	Yes	200	2,000	2	2	Yes					
North Dakota.....	50		30		Yes										
Ohio.....	25	500		12	Yes										
Oklahoma.....	100	500	30	12	Yes										
Oregon.....	100	2,000		12	Yes										
	100	\$1,000	30	12	Yes		1,000	3	1	Yes					

¹ Both fine and imprisonment may be imposed for this offense in every State where both are authorized.

² Both fine and imprisonment must be imposed.

³ Imprisonment may be 6 months in jail or 12 months in chain gang.

TABLE 6.—Penalties for operating a motor vehicle while in an intoxicated condition or while under the influence of intoxicating liquor—Continued

State	First offense				May both fine and imprisonment be imposed	Second offense				Imprisonment mandatory on this offense	Third offense				Imprisonment mandatory on this offense
	Fine		Imprisonment			Fine		Imprisonment			Fine		Imprisonment		
	Minimum	Maximum	Minimum	Maximum		Minimum	Maximum	Minimum	Maximum		Minimum	Maximum	Minimum	Maximum	
Pennsylvania	200	200	Days	Months	Yes	200	500	Months	Years	Yes			Years	Years	Yes
Rhode Island		500		36	Yes				1	1				1	
South Carolina	25	100	20	12	Yes			3	2						
South Dakota	50	300		1	Yes										
Tennessee	10	100		1	Yes										
Texas	50	500	30	24	Yes										
Utah	100	299	30	6	Yes		1,000	3	1	Yes					
Vermont	50	500	30	24	Yes			2	2	Yes					
Virginia	100	1,000	30	6	Yes	100	1,000	1	1	Yes					
Washington	50	500	10	12	Yes	100	1,000	1	1	Yes					
West Virginia	25	100	5	6	Yes			12	3	Yes					
Wisconsin		100		6	Yes	200			1						
Wyoming		100		6	Yes										
District of Columbia		500		6	Yes		1,000		1						

It may be noted that the courts of five States⁵⁸ must impose a prison sentence for first conviction of drunken driving, and that many States provide substantial minimum fines for such conviction. However, two States⁵⁹ provide no prison sentence at all. Upon a second conviction it is mandatory for the court to impose a prison sentence in 23 States.⁶⁰ However, there are 15 States⁶¹ which impose no heavier penalty for the second conviction of this offense than for the first.

The second class of penalty consists in withdrawing the privilege of operating a motor vehicle, by suspension or revocation of the driver's license, or by order of the court. Forfeiture of the driving privilege upon a first conviction is mandatory in 40 States⁶² and in the discretion of the court in three others.⁶³ The length of such forfeiture varies from a minimum of 1 month to 3 years to a maximum that is generally left to the discretion of the court or motor-vehicle commissioner, and seldom is less than 1 year.

A third type of penalty is found in seven States, in four of which⁶⁴ the court may, and in the other three must,⁶⁵ impound the vehicle operated by a drunken driver, if it is registered in his name. This is accomplished in four States⁶⁶ by taking up the registration plates of the vehicle, and in the other three⁶⁷ by actually locking up the vehicle in an approved place other than at the home of its owner. The period for which such vehicle is impounded varies from 1 to 6 months, and where the registration plates are taken up it usually is for the remainder of the registration year.

If death or serious bodily injury results from an accident involving a person operating a motor vehicle while intoxicated, the offense is an aggravated one and subject to heavier penalties in 11 States.⁶⁸ Prison sentences, ranging from 30 days to 20 years, may be imposed, as well as heavy fines.

In five States⁶⁹ it is a misdemeanor for the owner of a motor vehicle to permit it to be driven by one under the influence of intoxicants, for which the penalty upon the owner is generally the same as though the owner himself were driving while intoxicated.

DRIVING WHILE UNDER THE INFLUENCE OF NARCOTIC DRUGS

The offense of driving while under the influence of narcotic drugs is very generally accorded the same treatment as that of drunken driving.

⁵⁸ Arizona, Florida, Indiana, Nebraska, and Oregon.

⁵⁹ Kentucky and Mississippi.

⁶⁰ Alabama, Arkansas, Colorado, Connecticut, Idaho, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Michigan, Nebraska, New Hampshire, New Jersey, New Mexico, New York, Oregon, South Carolina, Utah, Vermont, Virginia, and West Virginia.

⁶¹ Arizona, Florida, Georgia, Kansas, Massachusetts, Missouri, Nevada, North Carolina, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, Texas, and Wyoming.

⁶² Alabama, Arizona, Arkansas, (California if operator is under 18 years of age), Colorado, Connecticut, Delaware, Idaho, Illinois (chauffeurs' licenses only), Indiana, Iowa, Kansas, Kentucky, Louisiana (chauffeur's license only), Maine, Massachusetts, Michigan, Minnesota, Montana, Nebraska, Nevada (revoke registration of guilty operator's automobile), New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota (cancel registration of automobile), Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wyoming (enjoin operation by guilty driver), and the District of Columbia.

⁶³ California (if operator is over 18), Maryland, and Wisconsin.

⁶⁴ Maine, Montana, New York, and South Dakota.

⁶⁵ Nevada, Oregon, and West Virginia.

⁶⁶ Maine, Nevada, New York, and South Dakota.

⁶⁷ Montana, Oregon, and West Virginia.

⁶⁸ California, Connecticut, Florida, Kansas, Louisiana, Maine, Nebraska, Nevada, Washington, Wisconsin, and Wyoming.

⁶⁹ Kansas, Michigan, New Jersey, Pennsylvania, and West Virginia.

In 15 States⁷⁰ it is unlawful for an habitual user of narcotic drugs to operate a motor vehicle, even though such person may have been issued a driver's license (26 States prohibit issuance of a license to such persons).⁷¹ To operate a motor vehicle while under the influence of drugs is criminal in 41 States.⁷² Six other States⁷³ limit the inhibition to driving while in an intoxicated condition, whether from drugs or liquor. In Oklahoma habitual users of drugs are forbidden to drive, but those who are only occasionally under their influence are not mentioned, while in Massachusetts the law contains no prohibition against driving by drug addicts.

The penalties imposed on those convicted of operating a motor vehicle while in a drugged condition are the same as for driving while in an intoxicated condition or while under the influence of liquor in every State except California, which imposes considerably heavier penalties for the former offense.

RECKLESS DRIVING

There is considerable variance in the laws of the several States as to what constitutes reckless driving.

In eight States,⁷⁴ no such offense is found in the statutes. In four of these States,⁷⁵ an absolutely fixed maximum speed limit is declared, and any speed in excess of such limit is a misdemeanor, whether reckless or not. Reckless driving was declared to be a misdemeanor in Oklahoma, and the constitutionality of this provision was attacked and upheld in the case of *Brock v. State*.⁷⁶ Nevertheless, this section of the law was later repealed by the Oklahoma legislature, and the offense no longer exists. In Texas a statute requiring motor vehicle operators to drive carefully in passing other vehicles was declared unconstitutional as being too indefinite to furnish a standard of conduct in the case of *Ladd v. State*,⁷⁷ and no subsequent legislation has been enacted, reliance being placed upon the fixed speed limit. The law of Missouri requires the motor-vehicle operator to exercise the highest degree of care at all times but does not define a departure from this standard as reckless driving. No provision intended to curb reckless driving was found in the laws of Kansas⁷⁸ or Wyoming.

The remaining States have adopted varying definitions of reckless driving, which, in general, fall into two classes.

In the first class, three variations of the same basic idea are found. A group of 18 States⁷⁹ declare, in substantially the same language, that any person who drives a motor vehicle in such a manner as to indicate either a willful or a wanton disregard for the safety of persons or property, or without due circumspection, and at a speed

⁷⁰ Arizona, Arkansas, California, Colorado, Idaho, Illinois, Louisiana, Michigan, Minnesota, New Mexico, Oklahoma, Oregon, South Dakota, Utah, and Wisconsin.

⁷¹ See note 34, p. 46.

⁷² All States except Florida, Iowa, Kentucky, Massachusetts, Mississippi, New York, North Dakota, and Oklahoma.

⁷³ Florida, Iowa, Kentucky, Mississippi, New York, and North Dakota.

⁷⁴ Georgia, Kansas, Missouri, Mississippi, Oklahoma, South Carolina, Texas, and Wyoming.

⁷⁵ Georgia, Mississippi, South Carolina, and Texas.

⁷⁶ 263 Pacific Reporter 1115.

⁷⁷ 115 Texas Criminal Reports 355; 27 Southwestern Reporter (2d) 1098 (1930).

⁷⁸ The driver's license of an habitually reckless driver may be revoked in Kansas, but the statutes nowhere define what constitutes reckless driving.

⁷⁹ Alabama, Colorado, Idaho, Iowa, Louisiana, Michigan, Minnesota, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, South Dakota, Tennessee, Utah, West Virginia, Wisconsin, and the District of Columbia.

or in a manner so as to endanger, or be likely to endanger, any person or property, shall be guilty of reckless driving. Four other States⁸⁰ omit the latter part of the definition and restrict the offense to driving in such a manner as to indicate either a willful or a wanton disregard for the safety of persons or property. A third group of States⁸¹ in this same class prohibits reckless driving substantially in the following manner: No person shall operate or cause to be operated any motor vehicle upon the public highways recklessly, or at a rate of speed greater than is reasonable and proper, having due regard to the width, traffic, and use of such highways, or so as to endanger property or the life or limb of any person. States in this group vary somewhat from this language, some setting out more definite guides to determine what is reckless, and some merely declaring that to drive recklessly is unlawful, but the language given above is fairly typical.

The three types of definition which fall within this class make no attempt to specify what driving practices constitute reckless driving, being content merely to set up more or less vague standards of conduct to guide the enforcement officer.

A second class of statutes enacted in 6 States⁸² declares specific acts to be reckless driving. Such enactments usually define the offense in general terms, as in the first class, and then particularize it by setting out a more or less complete category of bad driving practices that fall within the scope of the statute. This enumeration of offenses is rather fragmentary in most of these States, but in Indiana⁸³ and Virginia⁸⁴ comprehensive lists of practices that constitute reckless driving are set out.

The penalties imposed for conviction of reckless driving are shown in table 7. It will be observed that they vary considerably.

⁸⁰ Arkansas, California, Illinois, and Nebraska.

⁸¹ Arizona, Connecticut, Florida, Maine, Maryland, Massachusetts, Montana, New Hampshire, Nevada, New York, Ohio, Rhode Island, and Vermont.

⁸² Delaware, Indiana, Kentucky, Pennsylvania, Virginia, and Washington.

⁸³ Baldwin's Revised Statutes (1934), sec. 11173.

⁸⁴ Acts of Assembly (1936), ch. 125.

TABLE 7.—Penalties for reckless driving

State	First offense						Second or subsequent offense						Third or subsequent offense				May both fine and imprisonment be imposed	
	Fine			Imprisonment			Fine			Imprisonment			Fine		Imprisonment			
	Mini- mum	Maxi- mum	Dollars	Days	Months	Maxi- mum	Mini- mum	Dollars	Maxi- mum	Days	Months	Maxi- mum	Mini- mum	Dollars	Maxi- mum	Days		Months
Alabama.....	25	500		5	3		50	1,000		10	6							Yes.
Arizona.....	25	250		5	3		50	1,000		10	6							Yes.
Arkansas.....	25	500		5	3		50	1,000		10	6							Yes.
California.....	25	250		5	3		50	1,000		10	6							Yes.
Colorado.....	25	500		5	3		50	1,000		10	6							Yes.
Connecticut.....	25	100		10	1		100	200		15	1							Yes.
Delaware.....	10	100		10	1		3 50	200										Yes.
Florida.....		100			1													Yes.
Georgia.....																		Yes.
Idaho.....	25	300		5	3		50	300		10	6							Yes.
Illinois.....		1,000			12													Yes.
Indiana.....	1	500			12													Yes.
Iowa.....		100			1													No.
Kansas.....																		Yes.
Kentucky.....	10	100																Yes.
Louisiana.....	25	500		5	3		50	1,000		10	6							Yes.
Maine.....		200			3		200	500			11							Yes.
Maryland.....	1	100																Yes.
Massachusetts.....	20	200		14	24													Yes.
Michigan.....	25	100		5	12		30	1,000		10	6							Yes.
Minnesota.....		1,000			3													No.
Mississippi.....		100																Yes.
Missouri.....																		Yes.
Montana.....	10	300		5	1		300	500		180	36							Yes.
Nebraska.....	10			5	3		25	100		10	3							Yes.
Nevada.....		500			6													Yes.
New Hampshire.....		100			6					30	12							Yes.
New Jersey.....		100			1						2							Yes.
New Mexico.....		100		5	3			1,000		10	6							Yes.
New York.....		500			1		50	200			3							Yes.
North Carolina.....		100			3			1,000		10	6							Yes.
North Dakota.....	25	500		5	3		50	1,000		10	6							Yes.
Ohio.....	10	100					25	100			1/3							Yes.

Oklahoma	1	500	5	3	50	1,000	10	6	Yes.
Oregon	25	500	5	3	50	1,000	10	6	No.
Pennsylvania	10	25	10	2 1/3					3 3
Rhode Island	200	200	1	1		3 500		2	Yes.
South Carolina	1								
South Dakota	5	500	5	3	50	1,000	10	6	Yes.
Tennessee	2	100		1					Yes.
Texas	1								Yes.
Utah		299		6	50	1,000	10	6	Yes.
Vermont		300		3		500		6	Yes.
Virginia	10	100		1	50	500	10	6	Yes.
Washington		250		3					No.
West Virginia	25	500	5	3	50	1,000	10	6	Yes.
Wisconsin		100		6		200		12	Yes.
Wyoming									Yes.
District of Columbia		100		1		4 1,000		12	Yes.

¹ State has no reckless driving statute.

2 Imprisonment shall be only upon default of fine.

³ To invoke increased penalty, all offenses must occur within 12 months.

⁴ To invoke increased penalty, all offenses must occur within 2 years.

In addition to the penalties shown in table 7 it is provided in the drivers' license laws of many States that upon a certain number of convictions within a designated time the operator's license shall be suspended or revoked.⁸⁵ It is further provided, independently of such drivers' license laws, by at least 12 States that the operator's license may,⁸⁶ or must,⁸⁷ be forfeited for a designated period upon a first conviction for reckless driving.

NEGLIGENT HOMICIDE

A crime, usually called negligent homicide, has been created by the legislatures of 19 States⁸⁸ to cover the situation where a person is killed through the negligent operation of a motor vehicle by another, not motivated by malice. In general, less severe penalties than for manslaughter are provided. The penalties prescribed usually include a fine varying from \$5 to \$5,000, and a prison sentence of from 10 days to 20 years, both of which may generally be imposed. In two States⁸⁹ indictment for this offense will stand in the event a person is seriously injured, even though death does not ensue.

RESTRICTIONS ON THE SPEED OF MOTOR VEHICLES

The laws of the various States regulating the speed of motor vehicles very generally contain different requirements for privately operated passenger vehicles and for commercial vehicles. This discussion of the subject, therefore, will follow this division and treat separately the two types of law.

In legislation designed to control the speed of privately driven passenger automobiles, 44 States⁹⁰ have adopted by statute the common-law rule that no person shall drive a vehicle on a highway at a speed greater than is reasonable and prudent under the conditions then existing. Most States enumerate certain conditions that are to be considered in determining whether the speed of a vehicle was reasonable and prudent, those most frequently named being the width, type of surface, alinement, and traffic of the highway, the type and condition of the motor vehicle, the frequency of intersections, and the weather. However, 21 States⁹¹ have gone farther and provide that no one shall drive at a speed which endangers the life, limb, or property of any person, while in 6 States⁹² it is provided that no person shall drive a vehicle upon a highway at a speed greater than will permit the driver to exercise proper control of the vehicle and to decrease speed or stop, as may be necessary, to avoid collision. In Wisconsin, the same thought is found phrased as follows: "Every person shall at all times have the motor vehicle operated by him under absolute control."

⁸⁵ See notes 83, 84, and 85, p. 52.

⁸⁶ Maryland, Montana, Nebraska, New Jersey, Oregon, Virginia, Washington, Wisconsin, and the District of Columbia.

⁸⁷ Alabama, Massachusetts, and Utah.

⁸⁸ Arkansas, California, Connecticut, Louisiana, Michigan, Montana, Nebraska, New Hampshire, New Jersey, Ohio, Oregon, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

⁸⁹ Nebraska and Wyoming.

⁹⁰ All States except New Mexico, Tennessee, Texas, Vermont, and Wisconsin.

⁹¹ Alabama, California, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Louisiana, Maine, Maryland, New Hampshire, New Jersey, New York, North Dakota, Pennsylvania, Rhode Island, South Dakota, Washington, and Wyoming.

⁹² Arizona, Delaware, Oregon, South Carolina, Utah, and West Virginia.

Five States⁹³ require that the operator must be able to stop his vehicle at all times within the assured clear distance ahead. The operator of a motor vehicle must not drive at a rate that will unreasonably damage the highway in Maryland. One driving in excess of a reasonable and prudent speed in Louisiana is *prima facie* responsible for all damage, if he is involved in an accident. The statute in Missouri requires the motor-vehicle operator to exercise "the highest degree of care."

The foregoing provisions have been regarded by the courts as imposing a higher standard of caution on the motor-vehicle operator than the "ordinary care" required of him under the common-law standard of reasonable and prudent driving.

Of the five States⁹⁴ that have not enacted the basic common-law rule, New Mexico requires that passenger automobiles shall be operated at such speeds as will be consistent at all times with safety and the proper use of the roads and the Tennessee law has incorporated one of the generally used supplemental clauses, that no person shall drive a motor vehicle upon any road, street, or highway at such a speed as to endanger the lives or property of others. It then adds that, where an accident is caused by a vehicle running in excess of 20 miles per hour, there shall be a lien on the vehicle to satisfy any judgment recovered, whether it was driven at the time of the accident by the owner or another. Vermont and Wisconsin provide only that a motor vehicle shall not be operated in a careless or negligent manner, or so as to endanger or jeopardize life or safety. Local authorities, however, are given discretionary powers to fix maximum speed limits in these two States.

In Texas it is unlawful to drive faster than certain enumerated speeds, but the basic rule of the common law is not found in the statutes. This is probably due to the decision in the case of *Ladd v. State*,⁹⁵ mentioned in connection with reckless driving, in which the Texas Court of Criminal Appeals held that the requirement, that no person shall drive in a manner so as to endanger life, limb, or property, was void for uncertainty.

To furnish a more definite standard of permissive speed for the motorist, most States have prescribed maximum lawful speeds to apply in various areas.

In seven States⁹⁶ it is unlawful to exceed a fixed maximum speed. The motorist who drives faster than the statutory speed limit in a particular district is precluded from arguing that he was driving reasonably and prudently. The speed law may also be violated in all these States except Texas, while driving at a lower speed than the statutory maximum, if the existing conditions make such rate of speed greater than is reasonable and prudent.

A larger group of 26 States⁹⁷ set *prima facie* maximum legal speeds. In these States the motorist charged with exceeding the speed limit may show that, while he was driving faster than the statutory speed, he was exercising reason and prudence in so doing

⁹³ Iowa, Michigan, Ohio, Oklahoma, and Pennsylvania.

⁹⁴ New Mexico, Tennessee, Texas, Vermont, and Wisconsin.

⁹⁵ 115 Criminal Reports 355, 27 Southwestern Reports (2d) 1098.

⁹⁶ Georgia, Maryland, Mississippi, South Carolina, Texas, West Virginia, and the District of Columbia.

⁹⁷ Alabama, California, Colorado, Delaware, Florida, Idaho, Kentucky, Maine, Massachusetts, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Virginia, Washington, and Wyoming.

and thus escape conviction. The burden of proof, however, is on the motorist who exceeds the *prima facie* limit.

Another group of 16 States⁹⁸ have no fixed maximum speeds, relying solely on the basic rule of reason and prudence to guide the motorist. In two of these States, Arkansas and Connecticut, the proper authorities may mark the highways for maximum safe speeds, which are then binding on the motorist. In the absence of such signs no limits are specified.

The power of local authorities to alter the speed limits within their respective jurisdictions varies widely. In 11 States⁹⁹ the right to alter the State-wide limits is expressly denied, while in 10 States¹ local authorities may revise the State limits upward or downward at their own discretion. In 10 other States² the local authorities may raise or lower speeds, but only within certain limits. In 14 States³ the State-wide speed limit can be raised, but not lowered, while in South Carolina it can be lowered, but not raised. The laws of three States⁴ are silent on this point.

In recognition of the traffic hazard created by the driver who will not drive at a reasonably rapid speed for personal reasons, or who cannot due to the condition of his vehicle, a growing number of States have passed minimum-speed laws. Such laws follow three general patterns. A group of 12 States⁵ provides that no person shall drive a vehicle so slowly as to impede traffic. In nearly all of these States it is expressly stipulated that the slow driver may be arrested only if he continues to impede traffic after having been warned to speed up by an officer. Arrest and conviction after such warning usually subjects the guilty driver to the same penalty as conviction for speeding. In six States⁶ the basic rule states that speed shall not be greater or less than is reasonable and prudent. This apparently makes driving too slowly equally as grave an offense as speeding, and subjects the offender to the same penalties. A more moderate rule is found in four States⁷ which provides that slow-moving traffic shall drive at the extreme right edge of the highway, and shall not impede or hinder traffic approaching from the rear.

The provisions respecting speed limits and the penalties that follow conviction vary so widely that they can be presented best in tabular form, which is done in tabs 8 and 9 and graphically in figure 2. It will be noted that in only 12 States⁸ is the offense of speeding regarded as sufficiently serious to justify forfeiture of the operator's license. Of particular interest also is the provision in Maryland whereby violation of the basic rule subjects the operator to a fine of \$1 to \$100,

⁹⁸ Arizona, Arkansas, Connecticut, Illinois, Indiana, Iowa, Kansas, Louisiana, Michigan, Montana, Nevada, New Mexico, Oklahoma, Tennessee, Vermont, and Wisconsin.

⁹⁹ Connecticut, Delaware, Indiana, Iowa, New Hampshire, New Mexico, Ohio, Oklahoma, Rhode Island, Texas, and Wyoming.

¹ Alabama, Georgia, Kansas, Louisiana, Maryland, Massachusetts, Missouri, Montana, Nebraska, and Virginia.

² Arkansas, Colorado, Illinois, Mississippi, Nevada, New York, North Carolina, Tennessee, Vermont, and Washington.

³ Arizona, Idaho, Maine, Michigan, Minnesota, New Jersey, North Dakota, Oregon, Pennsylvania, South Dakota, Utah, West Virginia, Wisconsin, and the District of Columbia.

⁴ California, Florida, and Kentucky.

⁵ Arkansas, California, Colorado, Illinois, Nebraska, New Mexico, North Carolina, Oregon, South Carolina, Utah, Washington, and West Virginia.

⁶ Indiana, Iowa, Michigan, New Jersey, Pennsylvania, and Virginia.

⁷ Georgia, Kentucky, Nevada, and Texas.

⁸ Indiana, Maryland, Massachusetts, Mississippi, Nevada, New Hampshire, New York, North Dakota, Ohio, Rhode Island, Virginia, and Wisconsin.

while conviction of driving between 45 miles per hour, the legal maximum, and 60 miles per hour is followed by a fine of \$10 to \$100. One convicted of driving faster than 60 miles per hour must be fined at least \$100 and not over \$1,000.

The penalties for violation of the speed limit are generally milder than for reckless driving, and indicate that the offense is regarded almost everywhere as less serious than driving recklessly.

TABLE 8.—*Speed limits for privately operated passenger vehicles*

State	Speed limit is—		Maximum permitted speed				Does State law fix minimum speed
	Prima facie	Fixed	Open highway (miles per hour)	Residence district (miles per hour)	Business district (miles per hour)	Restricted or dangerous areas (miles per hour)	
Alabama.....	Yes.....	.....	45	20	15	15	
Arizona.....	.....	.....	(2)	25	20	15	
Arkansas.....	.....	.....	(2 3)	25	20	(4)	Yes.
California.....	Yes.....	.....	45	25	20	15	Yes.
Colorado.....	Yes.....	.....	60	30	25	20	Yes.
Connecticut.....	.....	.....	(2 3)	(2 3)	(2 3)	(4)	
Delaware.....	Yes.....	.....	45	25	25	(4)	
Florida.....	Yes.....	.....	45	25	15	15	
Georgia.....	.....	Yes.....	40	(7)	(7)	(4)	Yes.
Idaho.....	Yes.....	.....	35	20	15	15	
Illinois.....	.....	.....	(2)	25	20	(4)	Yes.
Indiana.....	.....	.....	(2)	30	20	.....	Yes.
Iowa.....	.....	.....	(2)	25	15	15	Yes.
Kansas.....	.....	.....	(2)	(7)	(7)	15	
Kentucky.....	Yes.....	.....	40	20	15	.....	Yes.
Louisiana.....	.....	.....	(2)	25	25	(4)	
Maine.....	Yes.....	.....	35	25	20	15	
Maryland.....	.....	Yes.....	45	25	20	.....
Massachusetts.....	Yes.....	.....	30	(2)	20	15	
Michigan.....	.....	.....	(2)	20	15	.....	Yes.
Minnesota.....	Yes.....	.....	45	20	15	15	
Mississippi.....	.....	Yes.....	50	20	20	10	
Missouri.....	Yes.....	.....	25	(7)	(7)	.....
Montana.....	.....	.....	(2)	(7)	(7)	.....
Nebraska.....	Yes.....	.....	50	25	20	(4)	Yes.
Nevada.....	.....	.....	(2)	30	30	.....	Yes.
New Hampshire.....	Yes.....	.....	35	20	15	15	
New Jersey.....	Yes.....	.....	40	20	15	15	Yes.
New Mexico.....	.....	.....	(2)	25	20	15	Yes.
New York.....	Yes.....	.....	40	(7)	(7)	.....
North Carolina.....	Yes.....	.....	45	25	20	(4)	Yes.
North Dakota.....	Yes.....	.....	50	25	25	20	
Ohio.....	Yes.....	.....	45	35	20	.....
Oklahoma.....	.....	.....	(2)	(2)	(2)	.....
Oregon.....	Yes.....	.....	45	25	20	15	Yes.
Pennsylvania.....	Yes.....	.....	40	20	20	15	Yes.
Rhode Island.....	Yes.....	.....	35	20	20	.....
South Carolina.....	.....	Yes.....	55	35	25	(4)	Yes.
South Dakota.....	Yes.....	.....	40	20	15	15	
Tennessee.....	.....	.....	(2)	(7)	(7)	.....
Texas.....	.....	Yes.....	45	20	20	.....	Yes.
Utah.....	Yes.....	.....	50	25	20	20	Yes.
Vermont.....	.....	.....	(2)	(7)	(7)	18	
Virginia.....	Yes.....	.....	45	25	15	15	Yes.
Washington.....	Yes.....	.....	50	35	25	20	Yes.
West Virginia.....	.....	Yes.....	45	25	20	15	Yes.
Wisconsin.....	.....	.....	(2)	25	15	(4)	
Wyoming.....	Yes.....	.....	35	(2)	(2)	(4)	
District of Columbia.....	.....	Yes.....	22	22	22	15	

1 Speed limit 5 miles per hour higher when traffic is controlled by signals.

2 No limit.

3 Highway commission may designate speed limits by placing appropriate signs.

4 Must decrease speed as necessary to avoid collision.

5 Restricted to 40 miles per hour on mountain highways.

6 For ¼ mile.

7 Local authorities may prescribe speed.

8 For ½ mile.

9 Must be able to stop within ½ of range of driver's vision.

10 District of Columbia Commissioners may raise to 30 miles per hour by so marking particular streets.

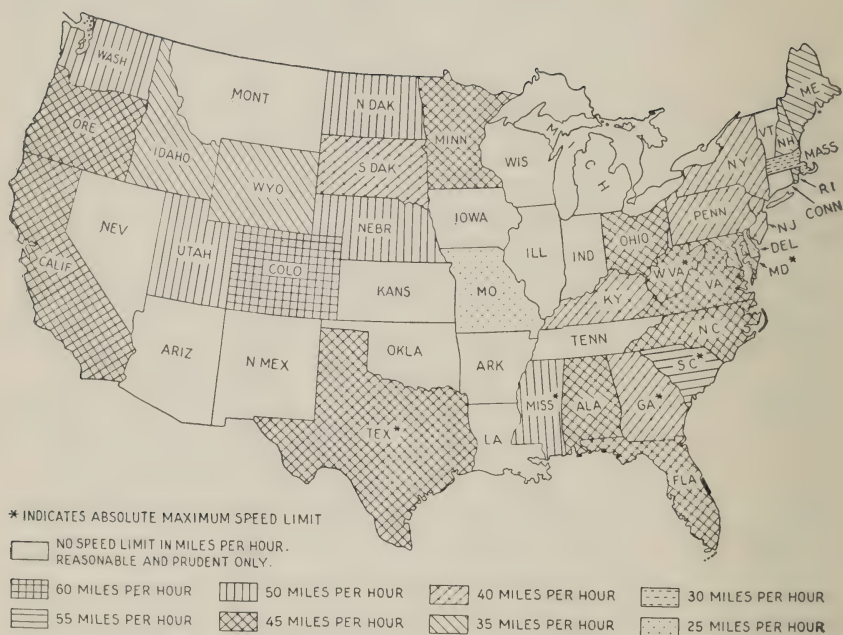


FIGURE 2.—SPEED LIMITS FOR PRIVATELY OPERATED PASSENGER VEHICLES. SPEED LIMITS ARE PRIMA FACIE MAXIMUM LEGAL SPEED LIMITS UNLESS OTHERWISE DESIGNATED.

TABLE 9.—Penalties for violation of speed restrictions

State	First offense				May both penalties be imposed	Second offense				Third offense				May both penalties be imposed on second and third offenses	All offenses must occur within—	Operator's license may be forfeited 1
	Fine		Imprisonment			Fine		Imprisonment		Fine		Imprisonment				
	Minimum	Maximum	Days	Maximum		Minimum	Maximum	Dollars	Maximum	Minimum	Maximum	Dollars	Maximum			
Alabama.....	Dollars	Dollars	Days	Days	No.	Dollars	Dollars	Days	Days	Dollars	Dollars	Months	Months	Yes	Years	
Arizona.....	100	100	10	180	Yes	200	200	20	20	500	500	6	6	Yes	1	
Arkansas.....	300	300	10	10	No.	200	200	20	10	500	500	6	6	Yes	1	
California.....	50	100	5	5	No.	100	100	20	20	500	500	6	6	Yes	1	
Colorado.....	5	100	10	10	No.	10	200	20	20	50	500	6	6	Yes	1	
Connecticut.....	10	100	10	10	No.	50	200	15	30			Yes	1	Yes	1	
Delaware.....	10	100	10	30	Yes	200	200	15	30			Yes	1	Yes	1	
Florida.....	100	100	90	90	Yes	200	200	15	30			Yes	1	Yes	1	
Georgia.....	1,000	1,000	180	180	Yes	200	200	60	60	300	300	6	6	Yes	1	
Idaho.....	100	100	30	30	No.	200	200	20	20	500	500	6	6	Yes	1	
Illinois.....	100	100	10	10	No.	100	100	10	180			Yes	1	Yes	1	
Indiana.....	100	100	10	10	No.	100	100	10	180			Yes	1	Yes	1	
Iowa.....	100	100	30	30	No.											
Kansas.....	10	100	180	180	Yes											
Kentucky.....	10	100	10	10	Yes	200	200	20	20	500	500	6	6	Yes	Yes.	
Louisiana.....	100	100	90	90	Yes											
Maine.....	100	100	10	10	Yes											
Maryland.....	1,000	1,000	30	365	Yes			30	730						Yes.	
Massachusetts.....	25	25	10	10	No.	25	50	20	20	100	100	6	6	Yes	Yes.	
Michigan.....	100	100	90	90	No.	200	200	20	20	500	500	6	6	Yes	1	
Minnesota.....	100	100	10	10	No.											
Mississippi.....	100	100	730	730	Yes	10	100	10	10	25	200	1	1	Yes	Yes.	
Missouri.....	500	500	10	10	No.	50	200	20	20	500	500	6	6	Yes	Yes.	
Montana.....	100	100	180	180	No.											
Nebraska.....	50	500	10	10	No.	50	200	20	20	500	500	6	6	Yes	Yes.	
Nevada.....	10	100	10	10	No.										Yes.	
New Hampshire.....	25	25	10	10	Yes	100	100	20	20					Yes	1	
New Jersey.....	50	50	10	10	No.	200	200	20	20	500	500	6	6	Yes	1	
New Mexico.....	100	100	30	30	Yes									Yes	1	
New York.....	100	100	10	10	No.	200	200	20	20	500	500	6	6	Yes	1	
North Carolina.....	100	100	10	10	Yes	200	200	20	20	500	500	6	6	Yes	1	
North Dakota.....	100	100	10	10	Yes	200	200	10	10	500	500	6	6	Yes	Yes.	
Ohio.....	10	100	5	5	Yes	25	100	10	10	Yes	Yes	Yes	Yes	Yes	Yes.	

¹ This penalty is independent of those contained in drivers' license laws, which generally do not specify speeding as an offense requiring forfeiture of license.² May in addition sentence to 12 months in chain gang.³ Applies only if speed exceeds 60 miles per hour.

TABLE 9.—*Penalties for violation of speed restrictions—Continued*

State	First offense				May both penalties be imposed	Second offense				Third offense				May both penalties be imposed on second and third offenses	All offenses must occur within— Years	Operator's license may be forfeited
	Fine		Imprisonment			Fine		Imprisonment		Fine		Imprisonment				
	Minimum	Maximum	Days	Maximum		Minimum	Maximum	Days	Maximum	Minimum	Maximum	Days	Maximum			
Oklahoma	10	100	10	30	Yes											
Oregon		100	10	10	Yes											
Pennsylvania	10	10		45	No.											
Rhode Island		200	30	30	Yes	500	500	60	60			3	Yes			Yes.
South Carolina	5	100	10	30	No.											
South Dakota		100	10	10	No.											
Tennessee	10	100		30	Yes	200	200	20	20			6	Yes	1		
Texas		200				500	500	60	60							
Utah		200		10	No.	200	200	20	20	1,000	1,000	6	Yes	1		
Vermont		300		90	Yes	500	500	180	180	299	299	6	Yes	1		
Virginia	10	100		30	Yes	50	500	10	180							Yes.
Washington		250		90	No.											
West Virginia	25	250		5	Yes	50	1,000	10	180			6	Yes			
Wisconsin		25				100	100	30	30							Yes.
Wyoming		50				50	100	60	60							
District of Columbia		25				100	100					6	Yes	1		

4 Imprisonment only in default of fine.

The speed limits of commercial vehicles vary widely with the type, size, and weight of vehicle. The speed of passenger busses is fixed at 45 miles per hour in 10 States,⁹ at 40 miles per hour in 3 States,¹⁰ and at 35 miles per hour in 3 States,¹¹ while Nevada fixes the limit at 30 miles per hour and Florida at 25 miles per hour.

In nine States¹² the speed of all trucks on the open highway is limited to 35 miles per hour, while in three States the limits are fixed, respectively, at 30,¹³ 40,¹⁴ and 45¹⁵ miles per hour. A group of 21 States¹⁶ fix separate speed limits for trucks of various gross weights and net loads. These speeds range from 10 to 45 miles per hour and provide for gradual decrease in speed with increase in load.

In the remaining States¹⁷ no separate provisions regulating the speed of motor trucks were found, thus apparently leaving them subject to the same limits as private vehicles. It is realized that speed restrictions exist in many of these States, by virtue of rulings or regulations of the public utilities commission, motor vehicle department, or corresponding agency, but they were not found in the statutory law.

Certain classes of vehicles are further restricted in speed in some States. For instance, trucks drawing trailers are limited in nine States¹⁸ to speeds varying from 15 to 35 miles per hour. Likewise the speed of solid-tired trucks of various weights is restricted in 25 States,¹⁹ and that of metal-tired trucks in 16 States.²⁰

It should be noted that truck speed limits are generally fixed, rather than *prima facie*, and usually are considerably lower than those provided for private passenger vehicles.

In concluding this discussion of speed limits for commercial vehicles, it should be emphasized again that a large body of commercial-vehicle regulations, having the force of law, exists in the rulings or regulations of the commissions of various States which control common and contract carriers operating intrastate and in promulgations of the several motor vehicle departments. Such rulings or regulations are not easily obtainable in complete form and have not been included herein.

The United States Interstate Commerce Commission, under authority of the Motor Carrier Act of 1935,²¹ issued certain safety regulations on December 23, 1936.²² The rule adopted therein in regard to the speed of common and contract carriers operating in interstate

⁹ Arizona, Illinois, Iowa, Kansas, Louisiana, Maine, New Mexico, Oklahoma, Oregon, and Utah.

¹⁰ Delaware, Missouri, and South Dakota.

¹¹ Ohio, Pennsylvania, and Vermont.

¹² Iowa, Kansas, Maine, New York, Oregon, Pennsylvania, Rhode Island, South Dakota, and West Virginia.

¹³ Mississippi.

¹⁴ South Carolina.

¹⁵ New Mexico.

¹⁶ Arizona, California, Delaware, Florida, Georgia, Illinois, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Nebraska, New York, Ohio, Oklahoma, Texas, Utah, Vermont, Washington, Wisconsin, and the District of Columbia.

¹⁷ Alabama, Arkansas, Colorado, Connecticut, Idaho, Indiana, Minnesota, Missouri, Montana, Nevada, New Hampshire, New Jersey, North Dakota, Tennessee, Virginia, and Wyoming.

¹⁸ Arizona, California, Florida, Nebraska, North Carolina, Oklahoma, Pennsylvania, South Dakota, and the District of Columbia.

¹⁹ Arizona, California, Delaware, Florida, Georgia, Illinois, Iowa, Maine, Maryland, Massachusetts, Michigan, Missouri, New Mexico, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Utah, Washington, West Virginia, and Wyoming.

²⁰ Arizona, California, Georgia, Iowa, Kentucky, Maryland, Massachusetts, Missouri, New Mexico, Ohio, Oklahoma, Oregon, Rhode Island, Utah, West Virginia, and Wisconsin.

²¹ 49 U. S. Statutes at Large 543.

²² Interstate Commerce Commission Reports, *ex parte* MC-4, Motor Carrier Safety Regulations, December 23, 1936.

commerce provides only that speed shall be reasonable and prudent under existing conditions and shall not exceed that permitted by the jurisdiction in which the carrier is operating.²³ In commenting on this rule, the Commission said, "We are of the opinion that no completely satisfactory solution has yet been found for the problem of controlling motor-vehicle speed upon the open highway. Accordingly, after careful study of all the evidence submitted and in the absence of adequate data or unified opinion among competent authorities, we have been impelled to refrain for the present from specifying a limit in miles per hour speed."²⁴

RULES OF THE ROAD

The statutes of every State contain, in greater or less detail, a collection of rules governing the operation of motor vehicles on its highways. In the discussion of this subject which follows, only those rules that seem of importance from the standpoint of traffic safety are included.

Drive to the right.—The fundamental rule of the road in the United States is that all vehicles shall be driven on the right side of the highway. In 40 States²⁵ the law requires that vehicles shall be driven to the right at all times, except when overtaking other vehicles or where it is impossible or impractical so to drive. In all of these, except Maryland, the law explicitly states that when vehicles approach each other, each must reasonably turn to the right, and yield one-half the highway to the other in passing. This rule is also present in seven of the States²⁶ that do not explicitly require vehicles to be driven to the right at all times. In Nevada, vehicles must be driven to the right only on curves and at the crest of hills, while in Kansas no provision at all was found on this point. It has been declared by the highest court of Kansas that "the driver of a vehicle is not necessarily negligent when he drives to the left of the center of the highway, as he is at liberty to use any part of the highway except in the case of meeting another vehicle or person, and then, under the rule of the road, he is required to keep to the right."²⁷

Slow-moving vehicles must be driven at the extreme right-hand edge of the road in 32 States²⁸ and in a few jurisdictions are required to be taken off the road entirely if they are unreasonably impeding traffic.

Overtaking another vehicle.—When the driver of a motor vehicle approaches a less swiftly moving vehicle from the rear and desires to pass it, in 36 States²⁹ he must first signal his intention by sounding his horn. In 16 of these States,³⁰ this provision does not apply in a residence or business district.

²³ Safety Regulations, rule 7, cited supra, note 22.

²⁴ Safety Regulations, page 8, cited supra, note 22.

²⁵ All States except Florida, Georgia, Indiana, Kansas, Mississippi, Nevada, New Hampshire, West Virginia, and Wyoming.

²⁶ Florida, Georgia, Indiana, Mississippi, New Hampshire, West Virginia, and Wyoming.

²⁷ *Giles v. Ternes*, 143 Pacific Reporter 491 (Supreme Court of Kansas, 1914).

²⁸ Alabama, Arizona, California, Delaware, Georgia, Idaho, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Jersey, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Dakota, Texas, Utah, Vermont, West Virginia, Wisconsin, and the District of Columbia. (See p. 88.)

²⁹ All States except Colorado, Connecticut, Illinois, Iowa, Kansas, Minnesota, Montana, New Hampshire, Oregon, Pennsylvania, South Carolina, Tennessee, and the District of Columbia.

³⁰ Alabama, Arizona, California, Delaware, Idaho, Massachusetts, Michigan, Nebraska, New Jersey, New Mexico, North Carolina, South Dakota, Utah, Virginia, Washington, and Wisconsin.

As a general rule, he must pass to the left of the overtaken vehicle, as provided by the statutes of 43 States, and shall not return to the right side of the road in 39 of these States³¹ until safely clear of the overtaken vehicle, and in the other 4 States³² shall not return until he is from 20 to 50 feet in front of it.

In 33 States³³ no vehicle shall be driven to the left side of the road in overtaking another unless the road is visibly free of oncoming traffic for a sufficient distance ahead to permit passing in safety. In six of these States³⁴ the overtaking vehicle must return to the right of the road before coming within 100 feet of approaching traffic. In Indiana the overtaking vehicle must return to the right before coming within 500 feet and in Texas within 150 feet of an approaching vehicle.

Other limitations placed upon the right to overtake and pass are that no vehicle shall be driven to the left side of the road to pass another under the following conditions: At the crest of a hill, in 35 States;³⁵ on a curve, in 36 States;³⁶ where the driver's view is obstructed for a specified distance, in 34 States;³⁷ within a limited distance of a bridge, tunnel, or other highway structure, in 9 States;³⁸ at an intersection with another highway, in 34 States;³⁹ at a railroad grade crossing, in 30 States;⁴⁰ or where authorized markers direct traffic to keep to the right, in 13 States.⁴¹

It is permitted to pass another vehicle on its right if it is preparing to make a left turn in 16 States;⁴² or if it is in a center lane on a multiple-lane highway, in 15 States.⁴³ In two of these States⁴⁴ this latter right can be exercised only in business and residence districts.

An overtaken vehicle is explicitly required to give way to the right upon signal from a vehicle desiring to pass it in all but 2

³¹ All States except Connecticut, Florida, Indiana, Iowa, Kansas, Maryland, Nevada, New Hampshire, Rhode Island, and Wyoming.

³² Connecticut, 20 feet; Iowa and Kansas, 30 feet; and Wyoming, 50 feet.

³³ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

³⁴ Arkansas, California, Colorado, Illinois, Minnesota, Nebraska.

³⁵ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Illinois, Indiana, Iowa, Louisiana, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

³⁶ Those mentioned in note 35, and Texas.

³⁷ Where view is obstructed for: No distance specified in Arkansas, California, Connecticut, Georgia, Maryland, Michigan, Missouri, Nebraska, Vermont, Virginia, West Virginia, and the District of Columbia; 150 feet in Arizona and Kentucky; 300 feet in Maine, Pennsylvania, and Tennessee; 500 feet in Alabama, Delaware, Idaho, Indiana, Louisiana, Minnesota, Nevada, New Mexico, North Carolina, North Dakota, Oregon, South Dakota, and Utah; 700 feet in Iowa; 750 feet in Colorado; 800 feet in Washington; 1,000 feet in Wisconsin.

³⁸ Within 100 feet in Arkansas, California, Illinois, Minnesota, and Nebraska; 200 feet in Colorado; 500 feet in Washington; approach, no given distance in Georgia and Utah.

³⁹ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Georgia, Idaho, Illinois, Iowa, Louisiana, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Virginia, West Virginia, Wisconsin, and the District of Columbia.

⁴⁰ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Georgia, Idaho, Illinois, Iowa, Louisiana, Maine, Maryland, Michigan, Minnesota, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Virginia, Washington, and Wisconsin.

⁴¹ Arkansas, Colorado, Illinois, Iowa, Louisiana, Maryland, Minnesota, Nebraska, North Carolina, Pennsylvania, Utah, Virginia, and Washington.

⁴² Arkansas, California, Colorado, Illinois, Minnesota, Missouri, New Jersey, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Virginia, Washington, and the District of Columbia.

⁴³ Same as note 42, except Washington.

⁴⁴ Pennsylvania and South Dakota.

States⁴⁵ and in 28 States⁴⁶ the overtaken vehicle is forbidden to increase its speed.

Multiple-lane highways.—On highways that have been divided into 3 or more lanes for traffic, 16 States⁴⁷ have enacted that a vehicle must be driven within a single lane, and shall not be moved from that lane until such movement can be made with safety. These same jurisdictions sanction the erection of signs on such highways directing slow-moving traffic to use only designated lanes.

In 15 States,⁴⁸ the center lane of a 3-lane highway is not for general use, but for passing other vehicles proceeding in the same direction. Thirteen of these States⁴⁹ provide that it may be allocated exclusively to traffic moving in one direction, and 13⁵⁰ also declare that it may be used in preparing to make a left turn.

Starting, stopping, and turning.—The laws of 41 States⁵¹ expressly provide that the driver of a vehicle intending to turn at an intersection shall make the approach for a right turn and the turn itself as close as practical to the right-hand edge of the roadway, and shall make the approach for a left turn in that part of the right half of the roadway closest to the center line thereof. As regards the method of making a left turn, 28 States⁵² provide that it shall be made by passing to the right of the center of the intersection, which is defined as the meeting point of the medial lines of the 2 roadways, while 12 States⁵³ permit passing to the left of the center, as defined above, as long as the vehicle leaves the intersection to the right of the center line of the road being entered. The State of Washington recently enacted a law which is a compromise between the methods just described, providing that if a marker be installed at the center of an intersection vehicles shall pass to the right of it, but that if no marker is provided they may pass to the left of the intersection's center.

Turning so as to proceed in the opposite direction is prohibited at certain places in many States. In 11 States⁵⁴ such U-turns are forbidden on curves, in 10 States⁵⁵ near the crest of a hill, and in 9 States⁵⁶ where the driver's view is obstructed for various specified distances. Four States⁵⁷ do not permit such turns in residence and business areas except at intersections, whereas one State⁵⁸ prohibits

⁴⁵ Connecticut and Tennessee.

⁴⁶ Alabama, Arkansas, Arizona, California, Colorado, Delaware, Idaho, Illinois, Indiana, Iowa, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Nebraska, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, Wisconsin, and the District of Columbia.

⁴⁷ Arkansas, California, Colorado, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, Ohio, Oregon, Rhode Island, Utah, Virginia, Washington, Wisconsin, and the District of Columbia.

⁴⁸ California, Colorado, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, Ohio, Oregon, Rhode Island, Utah, Virginia, Washington, Wisconsin, and the District of Columbia.

⁴⁹ Same as note 48, except Massachusetts and the District of Columbia.

⁵⁰ Same as note 48, except Rhode Island and Wisconsin.

⁵¹ All States except Florida, Georgia, Indiana, Kansas, Nevada, Tennessee, West Virginia, and Wyoming.

⁵² Alabama, Arizona, California, Connecticut, Delaware, Idaho, Iowa, Louisiana, Maine, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Rhode Island, South Dakota, Texas, Utah, Vermont, and Virginia.

⁵³ Arkansas, Colorado, Illinois, Kentucky, Minnesota, New Jersey, Ohio, Oregon, Pennsylvania, South Carolina, Wisconsin, and the District of Columbia.

⁵⁴ Arkansas, California, Colorado, Illinois, Louisiana, Minnesota, New Jersey, Oregon, Utah, Washington, and Wisconsin.

⁵⁵ Same as note 54, except Wisconsin.

⁵⁶ Same as note 54, except Louisiana and Wisconsin.

⁵⁷ Arizona, California, Virginia, and Washington.

⁵⁸ Wisconsin.

them only at intersections. In two other States⁵⁹ signs may be erected by the proper authorities prohibiting U-turns.

It is provided in 39 States⁶⁰ that a vehicle shall not enter or leave the stream of traffic on a highway unless such movement may be accomplished with reasonable safety. If pedestrians may be affected by such movement in 25 States,⁶¹ they must be warned by sounding the horn.

Before starting, in 23 States;⁶² or stopping, in 37 States;⁶³ or turning right or left, in 39 States;⁶⁴ a signal of such movement must be given to warn the operators of other vehicles. Such signal, where required, may be given by the hand and arm or, in all but 3⁶⁵ of these States, by means of a mechanical or electrical device approved by the proper authorities.

The manner in which hand signals are to be given varies greatly. To indicate an intention to stop or suddenly decrease speed, the left arm is to be extended beyond the side of the vehicle; horizontally in 17 States,⁶⁶ downward in 14 States,⁶⁷ and waved up and down, in 2 States.⁶⁸

An intention to turn to the left is to be conveyed to others by extending the left arm horizontally, in 27 States;⁶⁹ by extending the arm and pointing to the left, in 6 States;⁷⁰ by holding the left arm upward, in 1 State;⁷¹ and downward in another.⁷² A forthcoming right turn is to be signalled in 14 States⁷³ by extending the left arm horizontally, in 16 States⁷⁴ by holding it upward, in 3 States⁷⁵ by a circular motion of the left hand, and in 2 States⁷⁶ by a sweeping motion of the left arm from rear to front. The manner in which hand signals are to be given is left to the discretion of the operator, in 4 States.⁷⁷

It may be noted that in 12 States⁷⁸ the same signal, the left hand extended horizontally, is used to indicate a stop, a right turn, or a

⁵⁹ New Jersey and the District of Columbia.

⁶⁰ All States except Florida, Georgia, Kansas, Maine, Mississippi, Nevada, Oklahoma, Tennessee, West Virginia, and Wyoming.

⁶¹ Arizona, Arkansas, California, Colorado, Delaware, Georgia, Idaho, Illinois, Louisiana, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Texas, Utah, and Vermont.

⁶² Alabama, Arizona, California, Delaware, Georgia, Idaho, Indiana, Louisiana, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Virginia, Washington, and the District of Columbia.

⁶³ All except Florida, Kansas, Maine, Mississippi, Montana, Nevada, New Hampshire, Oklahoma, South Carolina, Tennessee, Wisconsin, and Wyoming.

⁶⁴ All except Florida, Kansas, Maine, Mississippi, New Hampshire, Oklahoma, South Carolina, Tennessee, Wisconsin, and Wyoming.

⁶⁵ Georgia, Nevada, and West Virginia.

⁶⁶ Alabama, Connecticut, Delaware, Georgia, Idaho, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New Mexico, New York, North Dakota, Pennsylvania, South Dakota, Vermont, and the District of Columbia.

⁶⁷ Arizona, Arkansas, California, Oregon, Illinois, Kentucky, Louisiana, Maryland, Nebraska, North Carolina, Oregon, Utah, Virginia, and Washington.

⁶⁸ Indiana and West Virginia.

⁶⁹ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Georgia, Idaho, Illinois, Indiana, Kentucky, Louisiana, Michigan, Minnesota, Montana, Nebraska, New Mexico, New York, North Dakota, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, West Virginia, and the District of Columbia.

⁷⁰ Connecticut, Maryland, Massachusetts, New Jersey, North Carolina, and Vermont.

⁷¹ Kentucky.

⁷² Missouri.

⁷³ Alabama, Delaware, Georgia, Idaho, Kentucky, Michigan, Minnesota, New Mexico, New York, North Dakota, Pennsylvania, South Dakota, Vermont, and the District of Columbia.

⁷⁴ Arizona, Arkansas, California, Colorado, Illinois, Indiana, Kentucky, Louisiana, Missouri, Nebraska, North Carolina, Oregon, Utah, Virginia, Washington, and West Virginia.

⁷⁵ Connecticut, Maryland, and Massachusetts.

⁷⁶ Illinois and New Jersey.

⁷⁷ Nevada, Ohio, Rhode Island, and Texas.

⁷⁸ Alabama, Delaware, Georgia, Idaho, Michigan, Minnesota, New Mexico, New York, North Dakota, Pennsylvania, South Dakota, and the District of Columbia.

left turn, leaving to the ingenuity of other operators the task of determining which movement is contemplated.

Right-of-way.—The fundamental rule governing the right-of-way between vehicles approaching each other on intersecting highways is substantially the same in nearly every State. When two vehicles approach an intersection from different highways at the same time the driver of the vehicle on the left must yield the right-of-way to the vehicle on the right in 46 States.⁷⁹ In the remaining three States, no statute was found regulating the right-of-way between vehicles at intersections. In 36 States⁸⁰ the driver of a vehicle approaching an intersection must yield the right-of-way to a vehicle which has already entered the intersection from a different highway, without regard to the direction from which it came.

In 42 States⁸¹ specified agencies are given the power to designate "through," "arterial," "preferred," or "stop" highways. All vehicles approaching such roads from intersecting ones must come to a complete stop before entering them. Having stopped, in 14 States,⁸² such vehicle shall yield the right-of-way to all vehicles approaching on the main highway so closely as to constitute an immediate hazard, but may then enter or cross the through highway, having preference over approaching vehicles, which must slow down to permit such entrance. The converse of this rule, giving preference to traffic on the through highway at all times was noted in four States.⁸³ It is provided in 37 States⁸⁴ that the driver of a vehicle entering a highway from a private road, driveway, or alley must stop and yield the right-of-way to all vehicles approaching on the highway.

It is specifically provided in 24 States⁸⁵ that the driver of a vehicle, having entered an intersection with the intention of making a left turn, must yield the right-of-way to oncoming traffic. In 13 of these States,⁸⁶ if a proper signal of such intention is given, oncoming vehicles not yet in the intersection must yield the right-of-way to the driver about to turn left and permit him to leave the intersection.

Authorized emergency vehicles are given the right-of-way over all others by the laws of 37 States.⁸⁷ It is generally provided that on the approach of such vehicle all others must pull to the side of the road and stop until the emergency vehicle has passed.

In a number of States⁸⁸ a vehicle that is operated at an unlawful speed forfeits whatever right-of-way it would otherwise have had.

⁷⁹ All States except Florida, Mississippi, and Montana.

⁸⁰ All States except Florida, Georgia, Illinois, Mississippi, Montana, New York, Ohio, Oklahoma, Texas, Vermont, Washington, West Virginia, and Wyoming.

⁸¹ All States except Florida, Georgia, Mississippi, Nevada, Oklahoma, West Virginia, and Wyoming.

⁸² Arkansas, California, Colorado, Connecticut, Minnesota, New Hampshire, New Jersey, Oregon, Pennsylvania, Rhode Island, South Carolina, Utah, Virginia, and the District of Columbia.

⁸³ Idaho, Illinois, Iowa, and Washington.

⁸⁴ All except Florida, Georgia, Indiana, Mississippi, Nevada, New Hampshire, Oklahoma, Rhode Island, Texas, Vermont, West Virginia, and Wyoming.

⁸⁵ Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, New Jersey, New Mexico, Oregon, Pennsylvania, South Carolina, Tennessee, Utah, Virginia, Wisconsin, and the District of Columbia.

⁸⁶ Arkansas, California, Colorado, Connecticut, Idaho, New Jersey, New Mexico, Oregon, Pennsylvania, South Carolina, Utah, Virginia, and the District of Columbia.

⁸⁷ All States except Florida, Georgia, Kansas, Mississippi, Missouri, Montana, Nevada, New Hampshire, Ohio, Oklahoma, West Virginia, and Wyoming.

⁸⁸ Colorado, Idaho, Louisiana, Michigan, Minnesota, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Tennessee, Virginia, and Wisconsin.

Miscellaneous rules.—In almost every State, the rules of the road contain a number of enactments, more or less unrelated, which have seemed desirable to the legislature at one time or another. A number of such miscellaneous rules in general use are discussed here.

In 27 States⁸⁹ motor vehicle operators must exercise due care not to frighten horses being ridden or driven along the road and must, upon signal from a horseman, bring their vehicles to a halt to permit restive horses to pass in safety.

In 27 States⁹⁰ vehicles proceeding in the same direction shall not follow each other more closely than is reasonable and prudent, having due regard for their respective speeds and the condition of the highway. Trucks are forbidden, in 28 States,⁹¹ to follow each other more closely than certain specified distances,⁹² except when overtaking and passing.

In 22 States⁹³ it has been explicitly provided that vehicles must be driven only in the proper direction on one-way streets, and in nine States⁹⁴ that they must be driven only to the right at rotary traffic islands.

The driver of a motor vehicle must not permit it to stand untended without first stopping the engine, in 28 States;⁹⁵ setting the brake, in 29 States;⁹⁶ turning the front wheels to the curb, in 21 States;⁹⁷ locking the ignition, in 9 States;⁹⁸ and removing the key, in 7 States.⁹⁹

It has been provided in 12 States¹ that no vehicle shall be driven while more than three persons occupy the front seat, or while the driver's view is obscured, or his control of the mechanism obstructed. It is provided in Nebraska that a vehicle shall not be driven while its front seat is occupied by more than 3 persons over 12 years of age.

⁸⁹ Alabama, Arizona, Florida, Georgia, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Mississippi, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Texas, Vermont, West Virginia, Wisconsin, and Wyoming.

⁹⁰ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Idaho, Illinois, Indiana, Iowa, Louisiana, Massachusetts, Michigan, Mississippi, Nebraska, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, Wisconsin, and the District of Columbia.

⁹¹ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Idaho, Illinois, Indiana, Iowa, Louisiana, Maine, Massachusetts, Michigan, Mississippi, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, and Wisconsin.

⁹² See the following:

Distance between trucks:	Number of States having provision
100 feet-----	14
150 feet-----	4
200 feet-----	4
300 feet-----	4
400 feet-----	1
500 feet-----	1

⁹³ Arkansas, Colorado, Illinois, Indiana, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, New Hampshire, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, West Virginia, and the District of Columbia.

⁹⁴ Arkansas, Colorado, Illinois, Minnesota, New York, Ohio, Pennsylvania, Vermont, and the District of Columbia.

⁹⁵ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Louisiana, Maryland, Massachusetts, Michigan, Missouri, Nebraska, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Utah, Vermont, Washington, and the District of Columbia.

⁹⁶ Same as note 95, and Virginia.

⁹⁷ Alabama, Arizona, Arkansas, Colorado, Delaware, Idaho, Illinois, Louisiana, Michigan, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, Utah, Virginia, Washington, and the District of Columbia.

⁹⁸ Arizona, Arkansas, Colorado, Illinois, Massachusetts, New Hampshire, New Mexico, Washington, and the District of Columbia.

⁹⁹ Arizona, Arkansas, Colorado, Illinois, New Hampshire, New Mexico, and Washington.

¹ Arkansas, California, Colorado, Connecticut, Delaware, Illinois, New York, Oregon, Pennsylvania, Utah, West Virginia, and the District of Columbia.

While operating on mountain highways, a driver must keep his motor vehicle under absolute control, in 24 States;² as close to the right-hand edge of the road as possible, in 25 States;³ and must sound his horn when approaching any curve where his view is obstructed for a specified distance,⁴ in 21 States.⁵ It is further provided in a few States that on mountain highways where the road is too narrow to permit easy passage a vehicle descending the grade must yield the right-of-way to an ascending one.

It is prohibited in 26 States⁶ to permit a vehicle to coast down a grade with its gears in neutral, and in 14 States⁷ to coast with the clutch disengaged. This latter requirement is often applied only to commercial vehicles.

The laws of 29 States⁸ prohibit the throwing of glass, tacks, or other substances likely to injure persons or vehicles, upon the highways.

A number of States⁹ have enacted laws prohibiting the driver from embracing another person while operating a motor vehicle. In New York it is the law that the driver must keep at least one hand on the wheel while his vehicle is in motion.

The increasing use of busses for the transportation of school children has led many States to enact measures to promote their safe operation. In 21 States¹⁰ it is provided that all vehicles approaching from either direction must stop when they come upon a school bus loading or discharging passengers and, in 10 more States,¹¹ must reduce their speed. Four States¹² require school busses to pull over to the right-hand side of the roadway to load and unload. In 15 States¹³ such busses are required to be distinctly marked for ready recognition. In many States, periodic inspection of school busses is required and their drivers must possess higher qualifications than operators of other vehicles.

PEDESTRIANS

The laws of a number of States¹⁴ contain no provisions concerning the rights and duties of the pedestrian on the highway, leaving him subject only to his common-law obligation to exercise due care.

² Alabama, Arizona, Arkansas, California, Colorado, Idaho, Illinois, Louisiana, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wyoming.

³ Same as note 2, and Georgia.

⁴ Generally 200 feet.

⁵ Alabama, Arizona, Arkansas, California, Colorado, Georgia, Idaho, Illinois, Kentucky, Louisiana, Nebraska, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Texas, Utah, Vermont, Washington, and West Virginia.

⁶ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Louisiana, Maine, Michigan, Minnesota, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Virginia, and the District of Columbia.

⁷ Arkansas, Colorado, Connecticut, Idaho, Illinois, Louisiana, Maine, Nevada, New Jersey, Oregon, Pennsylvania, Utah, Virginia, and the District of Columbia.

⁸ Arkansas, California, Colorado, Florida, Georgia, Illinois, Kentucky, Maine, Maryland, Minnesota, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, and West Virginia.

⁹ Nebraska, Oregon, Pennsylvania, Washington, and Wisconsin.

¹⁰ Alabama, California, Colorado, Florida, Georgia, Idaho, Indiana, Iowa, Louisiana, Maryland, Mississippi, Montana, Nebraska, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Washington, West Virginia, and Wyoming.

¹¹ Arizona, Arkansas, Delaware, Illinois, Minnesota, New Hampshire, Oregon, Texas, Utah, and Virginia.

¹² Arizona, Maryland, Montana, and Ohio.

¹³ Arkansas, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Maryland, Massachusetts, Minnesota, Mississippi, Montana, New York, Ohio, and Oregon.

¹⁴ Florida, Iowa, Kansas, Kentucky, Michigan, Mississippi, Missouri, Nevada, Oklahoma, and Wyoming.

In the majority of States, however, some laws concerning pedestrians are to be found. The pedestrian is required by statute, in 30 States,¹⁵ to obey traffic-control signals at intersections. At intersections where such signals are not in operation, a pedestrian crossing at a marked or unmarked crosswalk has the right of way over vehicles in 28 States.¹⁶ Vehicles must slow down or stop, if necessary, to permit such crossing in these jurisdictions.

Where traffic control signals are in operation at adjacent intersections, it is unlawful for pedestrians to cross the roadway between intersections in 23 States.¹⁷ Where such signals are not in operation at the adjacent intersections, the pedestrian may, in 32 States,¹⁸ cross the road at any place but must yield the right of way to all vehicles.

Pedestrians are forbidden, in 17 States,¹⁹ to stand in the roadway for the purpose of soliciting a ride; and in some States²⁰ to sell or beg in the roadway.

Twelve States²¹ have enacted legislation requiring pedestrians to walk to the left on the highway in order to face oncoming traffic. These laws are sometimes expressly declared to be safety measures only, and have been generally held by the courts to be declaratory of a safety policy and not mandatory, thus avoiding the necessity of finding the pedestrian negligent where he is injured while walking on the right side of the road.

SPECIAL STOPS

Many States provide, as a part of their law governing the operation of motor vehicles, that all or certain types of vehicles must be brought to a stop under specified circumstances.

It is the law of 24 States²² that every vehicle must stop at a railroad grade crossing when warned by a mechanical or electric device or a human flagman of the approach of a train. In 20 States authority is delegated to certain agencies to erect "stop" signs at particularly dangerous crossings; and where such signs are erected every vehicle must come to a complete stop,²³ or slow down so as to be able to stop,²⁴ on the near side of such crossing.

¹⁵ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Louisiana, Maryland, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Texas, Utah, Vermont, Virginia, Wisconsin, and the District of Columbia.

¹⁶ Alabama, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Illinois, Indiana, Louisiana, Maryland, Massachusetts, Minnesota, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Virginia, Wisconsin, and the District of Columbia.

¹⁷ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Illinois, Louisiana, Maine, Maryland, Minnesota, New Jersey, New York, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Wisconsin, and the District of Columbia.

¹⁸ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Louisiana, Maine, Maryland, Minnesota, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

¹⁹ Arkansas, Colorado, Connecticut, Delaware, Illinois, Iowa, Maine, Minnesota, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Utah, Virginia, Wisconsin, and the District of Columbia.

²⁰ Connecticut, Delaware, New Jersey, and Pennsylvania.

²¹ Illinois, Iowa, Maryland, Minnesota, Mississippi, New York, Oregon, Rhode Island, Virginia, Washington, Wisconsin, and the District of Columbia.

²² Alabama, Arkansas, California, Colorado, Delaware, Idaho, Illinois, Louisiana, Maine, Michigan, Minnesota, Nebraska, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Utah, Vermont, Virginia, and Washington.

²³ Alabama, Colorado, Florida, Idaho, Louisiana, Michigan, Minnesota, North Mexico, North Carolina, North Dakota, Oregon, South Dakota, Tennessee, Utah, and Washington.

²⁴ Maine, Massachusetts, New Hampshire, Texas, and Wyoming.

In a large number of States designated types of vehicles must stop before proceeding over any railroad grade crossing. Among those most widely included in this class are passenger busses, in 24 States;²⁵ busses carrying school children, in 29 States;²⁶ trucks bearing inflammable or explosive cargo, in 22 States;²⁷ and all cumbersome, slow-moving equipment in 11 States.²⁸ In Nebraska all trucks must stop at all crossings and in New Jersey this rule applies to all trucks with trailers attached. Rather extensive regulations governing the passage of slow-moving equipment over grade crossings are found in many States. These generally include notification of the railroad of intention to cross and waiting until it is determined that no trains will approach during the time necessary to make such crossing.

A law enacted in 40 States²⁹ provides that a motor vehicle following a streetcar must stop at distances from 5 to 10 feet³⁰ to the rear of the car when it stops to load or discharge passengers. In 35 of these States³¹ an exception is made to this rule when safety zones are provided for streetcar passengers. As corollaries to these rules, it is provided in 26 States³² that a motor vehicle shall not be driven through a safety zone at any time; and in 27 States³³ that a motor vehicle shall not overtake and pass a streetcar to the left. In 21 States³⁴ exceptions are made to this last requirement on one-way streets where the car tracks are on the side of the road and under certain other circumstances.

The necessity of bringing motor vehicles to a stop when approaching arterial highways or emerging from private roads or driveways has been previously discussed in connection with right-of-way and will not be repeated here.

STANDING AND PARKING

Every State³⁵ prohibits parking of motor vehicles on the highway outside business and residential areas unless certain conditions can be met. The conditions under which parking may be permitted vary

²⁵ Arizona, Arkansas, California, Colorado, Illinois, Iowa, Louisiana, Maryland, Massachusetts, Minnesota, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Washington, Wisconsin, and Wyoming.

²⁶ Arizona, Arkansas, California, Colorado, Idaho, Illinois, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, and Wyoming.

²⁷ Arizona, Arkansas, California, Colorado, Connecticut, Illinois, Louisiana, Massachusetts, Minnesota, Montana, Nevada, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Washington, and Wisconsin.

²⁸ Arkansas, Colorado, Illinois, Louisiana, Minnesota, Montana, New Jersey, North Carolina, Oregon, Rhode Island, and Utah.

²⁹ All States except Florida, Kansas, Mississippi, Nevada, New Mexico, Ohio, Oklahoma, South Carolina, and Tennessee.

³⁰ 5 feet to rear of car, 10 States; 6 feet to rear of car, 1 State; 7 feet to rear of car, 1 State; 8 feet to rear of car, 1 State; 10 feet to rear of car, 16 States; no distance specified, 11 States.

³¹ All States except Connecticut, Florida, Indiana, Kansas, Mississippi, Montana, Nevada, New Hampshire, New Mexico, Ohio, Oklahoma, South Carolina, Tennessee, and Wyoming.

³² Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Louisiana, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, Wisconsin, and the District of Columbia.

³³ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Idaho, Illinois, Iowa, Kentucky, Louisiana, Maine, Michigan, Minnesota, Nebraska, New Jersey, New York, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Washington, Wisconsin, and the District of Columbia.

³⁴ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Illinois, Iowa, Louisiana, Michigan, Nebraska, New Jersey, New York, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Utah, Washington, and Wisconsin.

³⁵ District of Columbia not included.

widely, the most usual being that a designated width³⁶ of highway must be left unobstructed and that the parked vehicle must be visible for a specified distance³⁷ along the road. In four States³⁸ it is forbidden to park on the traveled part of the roadway; in two States³⁹ a vehicle must be parked as close to the right of the highway as possible; two States⁴⁰ provide that a vehicle shall not be parked so as to obstruct traffic; and in five States⁴¹ parking on the highway is prohibited without exceptions or conditions. Disabled vehicles are specifically excepted from this ban in 31 States.⁴²

A number of States, which will not be enumerated, have enacted legislation prohibiting parking in various specified places. It is prohibited to park within a specified distance of a fireplug in 25 States, in front of a private driveway in 23 States, within a certain distance of a cross walk at intersections in 23 States, within 15 to 25 feet of a fire-house entrance in 22 States, where prohibited by official signs in 20 States, in front of a public driveway in 15 States, at a marked cross walk in 15 States, on a sidewalk in 14 States, within a certain distance of an arterial highway "stop" sign in 11 States, opposite safety zones in 11 States, and at certain other places in a few States.

Parking on the roadway side of other vehicles, commonly termed "double parking," is banned in 10 States. In 24 States police officers are specifically authorized to compel vehicles standing in the traveled part of the roadway to be moved. In 18 States the wheels of a motor vehicle must be within 6 inches to 18 inches of the curb when parked parallel to the curb.

While legislation of this type is somewhat local in nature, being effective chiefly in cities and towns, attention is called to it because of the desirability of uniformity in these matters.

LIGHTING REQUIREMENTS

When displayed.—It is provided by statute in every State that motor vehicles must be provided with headlights, rear lights, and various other lighting equipment. The required lights must be displayed, in 22 States,⁴³ by all vehicles upon the highway at any time

³⁶ See the following:		<i>Number of States having provision</i>
Width of highway to be left clear:		
6 feet	-----	1
10 feet	-----	2
12 feet	-----	1
15 feet	-----	14
16 feet	-----	4
20 feet	-----	12
No distance specified	-----	1
³⁷ See the following:		<i>Number of States having provision</i>
Distance which the vehicles must be visible in order to park:		
150 feet	-----	2
200 feet	-----	29
300 feet	-----	2
No distance specified	-----	3

³⁸ Connecticut, Indiana, Michigan, and Wyoming.

³⁹ Missouri and West Virginia.

⁴⁰ Ohio and Vermont.

⁴¹ Iowa, Kansas, Mississippi, New York, and Rhode Island.

⁴² Alabama, Arkansas, California, Colorado, Delaware, Idaho, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Minnesota, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming.

⁴³ Alabama, Arizona, California, Connecticut, Delaware, Idaho, Louisiana, Michigan, Minnesota, Nebraska, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Rhode Island, South Dakota, Tennessee, Utah, Wyoming, and the District of Columbia.

from a half hour after sunset to a half hour before sunrise, and whenever there is not sufficient light to reveal substantial objects at a distance of 200 feet along the highway. In Pennsylvania the time is from 1 hour after sunset to 1 hour before sunrise, and when there is insufficient light to see 500 feet. Several States retain the half-hour provision, specifying different visibility distances, as follows: 160 feet in Massachusetts, 300 feet in New Jersey, 500 feet in 2 States,⁴⁴ and "when visibility is poor" in 3 States.⁴⁵

In 10 States⁴⁶ lights must be displayed from one-half hour after sunset to one-half hour before sunrise, with no qualification as to visibility, and in 2 more States⁴⁷ the same provision prevails with a 1-hour limitation. Three States⁴⁸ provide that lights must be displayed at night, while in Oklahoma they are required between "dusk and dawn," in Illinois from "sunset to sunrise," in Virginia when needed to see 300 feet ahead, and in Maryland when necessary to see 200 feet ahead.

Headlights.—Every State requires that motor vehicles must be equipped with at least two headlamps, one to be on either side of the front of the vehicle. In a few States the height at which these lamps are to be mounted is specified.⁴⁹ Many States make provision for the color of headlights. This is done affirmatively in 19 States,⁵⁰ by requiring white, amber, or yellow lights; and negatively in 17 States,⁵¹ by prohibiting red or green lights visible from in front of the vehicle. It is provided in many States⁵² that headlights must be visible for

⁴⁴ Arkansas and Colorado.

⁴⁵ Kentucky, Missouri, and South Carolina.

⁴⁶ Florida, Indiana, Iowa, Kansas, Maine, Mississippi, New Hampshire, Texas, Vermont, and Wisconsin.

⁴⁷ Montana and Nevada.

⁴⁸ Georgia, Washington, and West Virginia.

⁴⁹ See the following table:

State	Height of center of lamp above road in inches	
	Maximum	Minimum
California.....	42	30
Connecticut (top of lamp).....	56	
Missouri.....	42	

⁵⁰ California, Connecticut, Delaware, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Mississippi, Missouri, Montana, Nevada, New York, Rhode Island, South Carolina, Texas, and Wisconsin.

⁵¹ Alabama, Arizona, Arkansas, Colorado, Idaho, Louisiana, Minnesota, Nebraska, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Utah, Washington, and the District of Columbia.

⁵² See the following:
States having provision:

	<i>Distance ahead lights must be visible in feet</i>
Georgia.....	100
Florida, Maryland, Mississippi, Montana, New Hampshire, New Mexico, Ohio, and South Dakota.....	200
Kansas.....	300
Arkansas, Connecticut, Illinois, Indiana, Iowa, Missouri, Nevada, New York, and Texas.....	500

specified distances ahead, and in most States⁵³ that they must illuminate objects a certain distance away. Glaring headlights are explicitly prohibited by the laws of 37 States,⁵⁴ and in 2 others⁵⁵ headlights must be dimmed on approaching other vehicles.

In an effort to define glaring lights more exactly, it has been provided in 28 States⁵⁶ that the high-intensity portion of the uppermost headlight beam shall not rise above the center of the headlamp, and in 39 States⁵⁷ that it shall not be aimed higher than a specified distance, usually 42 inches,⁵⁸ above the level on which the vehicle stands at a given distance, usually 75 feet,⁵⁹ in front of the vehicle. The maximum bulb candlepower is fixed by statute or commission ruling in Missouri at 36, in 25 States⁶⁰ at 32, and in 3 States⁶¹ at 21. Six States have also set minimum bulb candlepower requirements—five⁶² specifying 21 and one,⁶³ 10.

A few States have enacted detailed specifications governing headlights, particularly in reference to modern multiple-beam lights.

Rear lamps.—Every motor vehicle, or the last unit of a combination of vehicles, must show a lighted rear lamp during the time specified for headlight display. This law prevails in every State. In all States but Florida, in which no color is specified, this rear lamp is required to be red. It must be visible from the rear for 500 feet, in 28 States;⁶⁴ for 300 feet, in Virginia; for 200 feet, in 2 States;⁶⁵ and for 100 feet, in 4 States;⁶⁶ while 14 States⁶⁷ require no specific distance for visibility. It is generally provided that the rear license plate shall be so illuminated by the rear lamp, or by a separate lamp, that it shall be legible from a distance of 50 feet. This

States having provision:	Distance ahead in feet objects must be discernible
Iowa and Nevada	75
Colorado and Pennsylvania	100
Missouri and Vermont	150
Massachusetts	160
California	175
Alabama, Arizona, Arkansas, Connecticut, Delaware, Idaho, Indiana, Kentucky, Louisiana, Maine, Maryland, Michigan, Minnesota, Nebraska, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Rhode Island, South Dakota, Tennessee, Utah, Virginia, West Virginia, Wisconsin, Wyoming, and the District of Columbia	200
Georgia and Washington; reasonable distance.	

⁵³ All States except Illinois, Maine, Mississippi, Missouri, Nevada, New Jersey, Oklahoma, South Carolina, Texas, Vermont, West Virginia, and Wisconsin.

⁵⁴ Illinois and Wisconsin.

⁵⁵ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Idaho, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Virginia, Wyoming, and the District of Columbia.

⁵⁶ All States except Connecticut, Georgia, Illinois, Kansas, Mississippi, Montana, Oklahoma, South Carolina, Texas, and Wisconsin.

⁵⁷ In 1 State the provision is 48 inches at 200 feet.

⁵⁸ This distance is 200 feet in 2 States and any distance the lights will reach in 2 others.

⁵⁹ Alabama, California, Connecticut, Delaware, Iowa, Louisiana, Maine, Maryland, Massachusetts, Minnesota, New Jersey, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and the District of Columbia.

⁶⁰ Indiana, Nevada, and New York.

⁶¹ California, Massachusetts, Oregon, Pennsylvania, and Washington.

⁶² Maryland.

⁶³ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Idaho, Illinois, Louisiana, Michigan, Minnesota, Missouri, Nebraska, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Utah, Washington, Wisconsin, Wyoming, and the District of Columbia.

⁶⁴ Kentucky and Maryland.

⁶⁵ Georgia, Maine, New Hampshire, and West Virginia.

⁶⁶ Connecticut, Florida, Indiana, Iowa, Kansas, Massachusetts, Mississippi, Montana, Nevada, New Jersey, Ohio, Oklahoma, South Carolina, and Vermont.

rule prevails in 29 States,⁶⁸ while the distance is 60 feet in 4 States,⁶⁹ 100 feet in 1 State,⁷⁰ and 25 feet in 2 others.⁷¹ No provisions upon this point were found in the remaining States.⁷²

Reflectors.—Many States require that certain types of vehicles be equipped with a reflector on the rear so placed⁷³ as to intercept the rays of the headlights of oncoming vehicles. This reflector may generally be independent of or combined with the rear light. In New York State every vehicle must be equipped with such reflector. In 6 States⁷⁴ all new vehicles and all commercial vehicles must be so equipped, while in 25 States⁷⁵ all or certain types of trucks must carry reflectors. Red is the most widely adopted color, being specified in all but 4 of the States⁷⁶ that require reflectors. Yellow, green, or amber are occasionally permitted as alternate colors.

Clearance, side-marker, and identification lights.—Many States, by statute, require that vehicles over a certain width be equipped with clearance lights to mark their position on the highway at night. Such lights are prescribed for vehicles over 70 inches in width in 3 States,⁷⁷ over 72 inches in 7 States,⁷⁸ over 76 inches in 1 State,⁷⁹ over 80 inches in 14 States,⁸⁰ and over 84 inches in 4 States,⁸¹ while in 4 States⁸² all commercial vehicles must be so equipped. In 29 of these States⁸³ one light must be provided on the left front and one on the left rear, visible from 200 to 500 feet to the front and rear, respectively. In the remaining four States⁸⁴ lights are required on the right and left, in the front and in the rear.

It is everywhere required that the lights on the rear shall be red, but the approved color of the front lights varies considerably. Green is permitted in 15 States,⁸⁵ white in 14 States,⁸⁶ amber in 3 States,⁸⁷ yellow in 3 States,⁸⁸ and blue in 1 State.⁸⁹ A considerable number of States permit the substitution of properly colored reflectors for lights in this classification.

⁶⁸ Alabama, Arizona, Arkansas, California, Colorado, Delaware, Georgia, Idaho, Illinois, Iowa, Louisiana, Michigan, Minnesota, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia, Wyoming, and the District of Columbia.

⁶⁹ Indiana, Maine, Massachusetts, and Rhode Island.

⁷⁰ Montana.

⁷¹ Maryland and Missouri.

⁷² Connecticut, Florida, Kansas, Kentucky, Mississippi, Nebraska, Nevada, North Dakota, Ohio, Oklahoma, South Carolina, Texas, and Wisconsin.

⁷³ Must be between 24 and 42 inches above the road in 6 States, 24 to 48 inches in 5 States, and other distances in 11 other States. The remaining States specify no particular positions.

⁷⁴ Colorado, Iowa, Maine, Minnesota, South Dakota, and Washington.

⁷⁵ Arkansas, California, Connecticut, Illinois, Indiana, Kansas, Massachusetts, Michigan, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Mexico, North Carolina, Oklahoma, Oregon, Pennsylvania, Rhode Island, Tennessee, Texas, Utah, Vermont, Wisconsin, and the District of Columbia.

⁷⁶ Kansas, New Hampshire, and South Dakota specify no color and Michigan requires a green reflector.

⁷⁷ Louisiana, Oklahoma, and Wyoming.

⁷⁸ Colorado, Iowa, New Hampshire, New Mexico, Oregon, South Dakota, and Washington.

⁷⁹ Texas.

⁸⁰ Alabama, Arizona, Arkansas, Idaho, Indiana, Minnesota, Nebraska, New York, North Carolina, North Dakota, Pennsylvania, Tennessee, Utah, and Wisconsin.

⁸¹ Kentucky, Maine, Mississippi, and Virginia.

⁸² Kansas, Massachusetts, Michigan, and South Carolina.

⁸³ Alabama, Arizona, Arkansas, Colorado, Idaho, Indiana, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Washington, Wisconsin, and Wyoming.

⁸⁴ Iowa, Kansas, South Carolina, and Virginia.

⁸⁵ Colorado, Indiana, Iowa, Kansas, Kentucky, Maine, Massachusetts, Nebraska, New Hampshire, Pennsylvania, South Carolina, Utah, Virginia, Wisconsin, and Wyoming.

⁸⁶ Alabama, Arizona, Arkansas, Idaho, Kentucky, Minnesota, North Carolina, North Dakota, Oklahoma, Oregon, South Dakota, Tennessee, Texas, and Washington.

⁸⁷ Maine, New Mexico, and Wisconsin.

⁸⁸ Mississippi, New York, and Washington.

⁸⁹ Wisconsin.

Vehicles or combinations of vehicles are required to display side marker lamps at night, in 14 States.⁹⁰ These lights are to be displayed on all vehicles over 20 feet in length, in five States;⁹¹ over 33 feet, in one State;⁹² on all truck and trailer combinations, in three States;⁹³ and on vehicles of unusual width, in five States.⁹⁴ One light, placed on the left side of the vehicle, is required in five States;⁹⁵ a light on each side in three States,⁹⁶ and two lights on each side in six States.⁹⁷ These marker lights are required to be white, red, or green, in various States.

A group of 9 States⁹⁸ provides that unusually large vehicles⁹⁹ must also carry identification lights, consisting of 3 green lights in front and 3 red lights on the rear, spaced in a horizontal line 6 to 18 inches apart at the top of the vehicle.

Miscellaneous lights.—Spotlights may be used on motor vehicles in most jurisdictions but their operation is generally drastically limited to prevent glare to oncoming drivers. One spotlight is permitted on a vehicle, in 24 States;¹ and 2, in 11 States.² In the remaining States no laws regulating the use of such lights were noted.

A vehicle carrying an overhanging load on the highway at night must, in all but 11 States,³ display a lighted red lantern at the extreme rear end of the load.

Statutes limiting the permissible number of auxiliary driving lamps to 2 were noted in 14 States,⁴ and to 3 in 8 States.⁵ These statutes generally prescribe the method of mounting such lamps, a usual provision⁶ being "on the front of the vehicle, not less than 24 inches from the ground."

Approval of lighting devices.—Most States give to the motor vehicle commissioner or corresponding official the power to approve or disapprove lighting equipment, and require that only approved

⁹⁰ California, Colorado, Delaware, Iowa, Kentucky, Maine, Maryland, Michigan, Montana, New Hampshire, Pennsylvania, Utah, Washington, and Wyoming.

⁹¹ Colorado, Pennsylvania, Utah, Washington, and Wyoming.

⁹² Iowa.

⁹³ Kentucky, Michigan, and New Hampshire.

⁹⁴ California, Delaware, Maine, Maryland, and Montana.

⁹⁵ Kentucky, Maine, Maryland, Michigan, and New Hampshire.

⁹⁶ Iowa, Washington, and Wyoming.

⁹⁷ California, Colorado, Delaware, Montana, Pennsylvania, and Utah.

⁹⁸ Arkansas, Colorado, Georgia, Illinois, Michigan, Mississippi, Pennsylvania, South Dakota, and Utah.

⁹⁹ See the following table:

State having provision	Width of vehicle in inches	Length of vehicle in feet
Arkansas, Colorado, Pennsylvania, and Utah	80	30
Illinois	80	25
Mississippi	84	20
South Dakota	72	15
Georgia	All property carriers. All vehicles over 2 tons.	
Michigan		

¹ Arkansas, Colorado, Connecticut, Illinois, Indiana, Kansas, Maine, Massachusetts, Missouri, Nebraska, Nevada, New Jersey, New Mexico, North Dakota, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Virginia, Washington, Wisconsin, and the District of Columbia.

² Alabama, Arizona, California, Delaware, Idaho, Louisiana, Michigan, Minnesota, North Carolina, West Virginia, and Wyoming.

³ Florida, Iowa, Massachusetts, Mississippi, Nevada, New Hampshire, Oklahoma, South Carolina, Tennessee, Vermont, and Wyoming.

⁴ Alabama, Arizona, Delaware, Idaho, Louisiana, Michigan, Minnesota, New Mexico, North Carolina, North Dakota, Oregon, Rhode Island, South Dakota, and Wyoming.

⁵ Arkansas, California, Colorado, Illinois, Nebraska, Pennsylvania, Utah, and Virginia.

⁶ Alabama, Arizona, Delaware, Idaho, Louisiana, Michigan, New Mexico, North Dakota, Washington, and Wyoming.

equipment be sold or used within the State. Some measure of such authority is vested in the commissioner or other official in 35 States.⁷ A few States have enacted in detail the specifications to be enforced by the commissioner, but most jurisdictions have been content to place a wide discretion in the hands of the administrator to approve only suitable lighting devices. No effort to depict the extent of such discretion has been made in this report.

RESTRICTIONS ON MOTOR-VEHICLE SIZES AND WEIGHTS

Six States, Connecticut, Illinois, Maryland, Massachusetts, New Hampshire, and Washington have no restriction on the height of vehicles. In the remaining States heights are restricted as follows:

States:	<i>Maximum height in feet</i>
Arizona, Montana, Pennsylvania, and Utah-----	14½
Idaho-----	14
California and Nevada-----	13½
New York and South Dakota-----	13
Arkansas, Colorado, Georgia, Louisiana, Maine, Michigan, Minnesota, Mississippi, Missouri, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Rhode Island, South Carolina, Texas, Virginia, West Virginia, Wisconsin, Wyoming, and the Dis- trict of Columbia-----	12½
Alabama, Delaware (12 feet, 2 inches), Florida, Indiana, Iowa, Kansas, Nebraska, Tennessee, and Vermont-----	12
Kentucky-----	11½
Oregon-----	11

In 45 States⁸ the total outside width of any vehicle or the load thereon may not exceed 8 feet; in 2 States⁹ the maximum is 8½ feet; in 1 State¹⁰ 7½ feet; and in 1 State¹¹ it is 7 feet.

There is no restriction on the length of a single vehicle in Maryland and Rhode Island. In other States the restriction is as follows:

States:	<i>Maximum length of a single vehicle in feet</i>
Nevada-----	60
Vermont-----	50
Oklahoma and Utah-----	45
Connecticut, Minnesota, North Dakota, and Wyoming-----	40
Maine-----	36
Arkansas, Colorado, Florida, Idaho, Illinois, Kansas, Michigan, Nebraska, New Mexico, New York, Ohio, Oregon, South Carolina, Texas, Washington, and West Virginia-----	35
Arizona, California, Delaware, Indiana, Louisiana, Mississippi, Missouri, Montana, North Carolina, Pennsylvania, Virginia, Wis- consin, and the District of Columbia-----	33
Alabama, Georgia, Iowa, New Hampshire, and South Dakota-----	30
Massachusetts and New Jersey-----	28
Tennessee-----	27
Kentucky-----	26½

The over-all length of tractor-semitrailer combinations is not limited in Maryland. In other States the limitations are as follows:

⁷ All except Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Michigan, Mississippi, Montana, Nevada, Oklahoma, South Carolina, West Virginia, and Wyoming.

⁸ All States except Connecticut, Florida, Rhode Island, and South Carolina.

⁹ Connecticut and Rhode Island.

¹⁰ South Carolina (modified by *Barnwell Bros. et al. v. South Carolina State Highway Department et al.* (District Court of U. S., E. D. of S. C., decided Jan. 20, 1937)).

¹¹ Florida.

States:	<i>Maximum length of tractor-semitrailer combinations in feet</i>
Arizona, Georgia, Rhode Island, and Washington	85
Pennsylvania	70
New York	65
California, Delaware, Montana, Nevada, and Utah	60
New Jersey	56
Kansas, Michigan, and Vermont	50
Arkansas, Iowa, Louisiana, New Hampshire, New Mexico, North Carolina, Oklahoma, Texas, Virginia, West Virginia, Wisconsin, and Wyoming	45
Alabama, Colorado, Connecticut, Indiana, Massachusetts, Minnesota, Missouri, North Dakota, Ohio, and South Dakota	40
Maine	36
Florida, Idaho, Illinois, Nebraska, Oregon, South Carolina, and Tennessee	35
Mississippi and the District of Columbia	33
Kentucky	30

In Alabama, Connecticut, Kentucky, and South Carolina combinations of vehicles other than tractor-semitrailers are not permitted. In other States limitations on combinations of vehicles coupled together are as follows:

States:	<i>Maximum length of combinations of vehicles in feet</i>
Maryland and Massachusetts	(¹)
Arizona, Georgia, Rhode Island, Washington, and the District of Columbia	85
Pennsylvania	70
Idaho and New York	65
Maine	62
California, Delaware, Montana, Nevada, Ohio, and Utah	60
New Jersey	56
Colorado, Kansas, Michigan, Mississippi, Oregon, and Vermont	50
Arkansas, Florida, Iowa, Louisiana, Nebraska, New Hampshire, New Mexico, North Carolina, Oklahoma, Texas, Virginia, West Virginia, Wisconsin, and Wyoming	45
Illinois, Indiana, Minnesota, Missouri, North Dakota, and South Dakota	40
Tennessee	35

¹ No limit.

Restrictions on the gross weight on any one axle are as follows:

States:	<i>Gross weight on a single axle in pounds</i>
Alabama, Florida, Kentucky, Louisiana, Maryland, Massachusetts, Nevada, Oklahoma, and Texas	(¹)
District of Columbia	24,640
New York and Rhode Island	22,400
Wisconsin	19,000
Washington	18,500
Arizona, Delaware, Idaho, Maine, Michigan, Minnesota, Ohio, Pennsylvania, Tennessee, Utah, West Virginia, and Wyoming	18,000
Georgia	17,600
California	17,000
Montana	16,800
Colorado, Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska, New Mexico, North Carolina, North Dakota, Oregon, South Dakota, and Virginia	16,000
Arkansas	15,200
New Hampshire and Vermont	15,000
Mississippi	12,000
South Carolina	10,000

¹ No limit.

In Connecticut the weight on each axle must be at least 20 percent of the gross weight, while in New Jersey the permissible axle loading varies with the size and pressure of the tire used, reaching a maximum of 22,000 pounds under specified conditions.

The gross weight of any four-wheel single-unit motor vehicle is limited as follows:

	<i>Limit on gross load of a 4-wheel single unit in pounds</i>
States:	
Michigan, Minnesota, New York, and Wyoming-----	36,000
Connecticut, Nebraska, North Dakota, and Rhode Island-----	32,000
District of Columbia-----	30,800
Massachusetts and New Jersey-----	30,000
Delaware and Pennsylvania-----	26,000
Maryland and Nevada-----	25,000
Colorado, Idaho, Illinois, Kansas, Maine, Missouri, Montana, Ohio, Oklahoma, Virginia, Washington, and Wisconsin-----	24,000
New Hampshire-----	23,000
Arizona, California, Georgia, and Mississippi-----	22,000
Alabama, North Carolina, South Carolina, and South Dakota-----	20,000
Kentucky and Tennessee-----	18,000
Florida and Vermont-----	16,000
Louisiana and Texas (pay load is limited in these States to 7,000 pounds)-----	14,000

In Arkansas, Indiana, Iowa, New Mexico, Oregon, Utah, and West Virginia the maximum is determined by a formula in which the type of tires and spacing of axles are factors. Formulas are given on page 112. Four-wheel trailers are not permitted in Alabama, Connecticut, Kentucky, and South Carolina.

The maximum gross weight of six-wheel single-unit motor vehicles is limited as follows:

Maximum gross weight of 6-wheel single-unit vehicles in pounds

States:	
Michigan (estimated) and New York-----	44,000
Minnesota (estimated)-----	42,000
Connecticut, Illinois, Maryland, Massachusetts, New Jersey, North Carolina, and Rhode Island-----	40,000
Georgia and District of Columbia-----	39,600
Nevada-----	38,000
Delaware, Maine, Pennsylvania, and Wisconsin-----	36,000
North Dakota and Virginia-----	35,000
Arizona, California, Colorado, Kansas, Montana, and Washington---	34,000
Nebraska-----	32,000
Missouri, Ohio, Oklahoma, and South Dakota-----	24,000
New Hampshire-----	23,000
Mississippi-----	22,000
Alabama and South Carolina-----	20,000
Kentucky and Tennessee-----	18,000
Florida and Vermont-----	16,000
Louisiana and Texas (pay load is limited in these States to 7,000 pounds)-----	14,000

In Arkansas, Idaho, Indiana, Iowa, New Mexico, Oregon, Utah, West Virginia, and Wyoming the maximum is determined by the formulas given on page 112.

A combination of a four-wheel truck and a four-wheel trailer is not permitted in Alabama, Connecticut, Kentucky, and South Carolina. In other States the maximum weight of such a combination is as follows:

Maximum weight of a combination of a 4-wheel truck and a 4-wheel trailer in pounds

States:

Arkansas, Idaho, Indiana, Iowa, New Mexico, New York, Oregon, Utah, West Virginia, and Wyoming-----	(¹)
Michigan and Minnesota-----	72,000
Rhode Island-----	64,000
District of Columbia-----	61,600
New Jersey-----	60,000
Illinois and Kansas-----	56,000
Pennsylvania-----	52,000
Maryland and Nevada-----	50,000
Colorado, Delaware, Missouri, Montana, Nebraska, Ohio, Oklahoma Washington, and Wisconsin-----	48,000
New Hampshire-----	46,000
Arizona, California, and Georgia-----	44,000
North Carolina-----	40,000
Maine-----	36,000
North Dakota (this combination of vehicles is prohibited for com- mercial use) and Virginia-----	35,000
Florida and Massachusetts-----	32,000
Mississippi and South Dakota-----	30,000
Louisiana (pay load is limited to 14,000 pounds)-----	28,000
Tennessee-----	18,000
Vermont-----	16,000
Texas (pay load is limited to 7,000 pounds)-----	14,000

¹ By a gross-weight formula.

The maximum gross weights of any permissible combination of vehicles are as follows:

States:	<i>Maximum gross weight, pounds</i>
Maryland and Rhode Island-----	120,000
District of Columbia-----	118,800
Nevada-----	114,000
Montana-----	92,000
Arizona-----	90,000
Illinois and Wisconsin-----	72,000
New Hampshire-----	69,000
California, Idaho, Kansas, and Washington-----	68,000
Arkansas-----	66,500
Ohio-----	66,000
Pennsylvania-----	65,000
Colorado-----	63,000
Delaware-----	62,000
Georgia-----	61,600
New Jersey-----	60,000
Oklahoma-----	55,000
Oregon-----	54,000
Missouri, Nebraska, and Wyoming-----	48,000
Florida-----	44,000
Connecticut, Indiana, Massachusetts (plus 1,000 pounds net load in trailer), and North Carolina-----	40,000
Maine-----	36,000
North Dakota, Vermont, and Virginia-----	35,000
Mississippi and South Dakota-----	30,000
Alabama and South Carolina-----	20,000
Kentucky and Tennessee-----	18,000

In Louisiana and Texas there is a limit of 14,000 pounds on the net load.

The permissible gross weight of combinations of vehicles is determined only by formula in Iowa, Michigan, Minnesota, New Mexico, New York, Utah, and West Virginia. Five other States also prescribe a formula applying to those combinations of vehicles previously referred to as being controlled by formula.

The formula, where used, consists of a variation of the gross-weight formula proposed by the American Association of State Highway Officials. The formulas prescribed by statute in various States follow:

Arkansas: $W=700(L+40)$, or $W=650(L+40)$.

California: $W=1750(L+8)$.

Colorado: $W=700(L+40)$.

Idaho: $W=600(L+40)$.

Indiana: $W=600(L+40)$.

Iowa: $W=450(L+53\frac{1}{2})$.

New Mexico: $W=600(L+40)$.

New York: $W=750(L+40)$.

Oregon: $W=700(L+40)$.

Utah: $W=700(L+40)$.

West Virginia: $W=1330(L+40)$, $1000(L+40)$, or $670(L+40)$.

Wyoming: $W=600(L+40)$.

In all of the above formulas W =maximum gross weight in pounds and L =distance in feet between the first and last axles.

It should be noted that the maxima set forth above for height, length, width, and weight are subject to qualifications and exceptions too numerous to set forth in this report.¹²

MISCELLANEOUS EQUIPMENT REQUIREMENTS

Brakes.—In all of the States but 1,¹³ the law requires that every motor vehicle shall be equipped with brakes adequate to control the movement of and to stop and hold such vehicle.

Thirty-one States¹⁴ require that every motor vehicle, other than a motorcycle, shall be equipped with two sets of independently operated brakes, so constructed that no part which is liable to failure shall be common to the two. Twenty-three States¹⁵ specify stopping distances within which brakes must be effective.

It is required by 22 States¹⁶ that every trailer or semitrailer over a specified gross weight shall be equipped with adequate brakes, and 15 of these States¹⁷ require that such brakes be so designed as to be applied by the driver from the cab of the towing vehicle.

Horns.—All but two States¹⁸ require that motor vehicles operated on the highways shall be equipped with horns or other suitable warning devices. Fourteen States¹⁹ prohibit the use of sirens, except on emergency vehicles.

¹² An accurate, concise, and readily understandable analysis of the detailed restrictions on the size and weight of vehicles in the various States will be found in a publication of the National Highway Users Conference entitled "State Restrictions on Motor Vehicle Sizes and Weights," and data supplemental thereto.

Another publication of the same organization entitled "Equipment Requirements for Motor Vehicles" contains similar detailed data concerning equipment requirements of the various States.

¹³ Wyoming.

¹⁴ Alabama, Arizona, Arkansas, Colorado, Connecticut, Delaware, Idaho, Illinois, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Utah, Washington, West Virginia, Wisconsin, and the District of Columbia.

¹⁵ Alabama, California, Colorado, Connecticut, Delaware, Illinois, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Texas, Virginia, Washington, Wisconsin, and the District of Columbia.

¹⁶ Arkansas, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, New Mexico, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Virginia, and Wisconsin.

¹⁷ Arkansas, Colorado, Connecticut, Delaware, Illinois, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, New Mexico, Pennsylvania, Tennessee, Virginia, and Wisconsin.

¹⁸ Oklahoma and Wyoming.

¹⁹ Alabama, Arizona, Delaware, Idaho, Minnesota, Nebraska, North Carolina, North Dakota, Oregon, South Dakota, Utah, Virginia, Wisconsin, and the District of Columbia.

Mufflers.—Mufflers are specifically required by all but eight States.²⁰ Muffler cut-outs are forbidden in all but four States.²¹

Mirrors.—Twenty-two States²² require rear-view mirrors on every motor vehicle so constructed or loaded as to obstruct the driver's view of the rear. In six additional States²³ the requirement applies only to specified classes of commercial vehicles. Nine States²⁴ require rear-view mirrors on all motor vehicles regardless of whether or not the vehicle is so constructed or loaded as to obstruct the driver's view of the rear, and 14 States²⁵ make a similar requirement for specified types of carriers regardless of construction or loading.

Windshield wipers.—In 20 States,²⁶ windshield wipers are statutorily required equipment on all motor vehicles.

Safety glass.—Twenty-one States²⁷ require that all motor vehicles manufactured after a specified date, in order to be eligible for sale, registration, or operation, must be equipped throughout with safety glass. In five additional States²⁸ the requirement covers all passenger-carrying vehicles. In Oklahoma it applies to school busses only.

Flares.—Twenty-two States²⁹ require that specified types of commercial vehicles shall carry flares, or similar warning devices, to be displayed when such motor vehicle is disabled at night and cannot be immediately removed from the traveled portion of the highway.

INSPECTION STATIONS

In 23 States³⁰ provision is made for official inspection stations at which all motor vehicles (or those types specified by law) are required periodically to undergo an inspection which usually includes brakes, lighting equipment, steering mechanism, horns, mirrors, windshield wipers, and other equipment, and to have same adjusted if found faulty. In six of these States³¹ the requirement is not State-wide, but applies only to specified cities or classes of municipalities. The number of inspections required varies from one to three per year. In 11 States³² the inspections are made by employees of the State or municipality; in the remaining States they are made by authorized privately owned garages or service stations. One of the

²⁰ Florida, Georgia, Kansas, Montana, Ohio, South Carolina, West Virginia, and Wyoming.

²¹ Kansas, Montana, Ohio, and Wyoming.

²² Alabama, Arizona, Arkansas, California, Colorado, Idaho, Illinois, Louisiana, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, North Carolina, North Dakota, Pennsylvania, South Dakota, Utah, Washington, Wyoming, and the District of Columbia.

²³ Maine, Maryland, Massachusetts, Nevada, South Carolina, and Tennessee.

²⁴ Connecticut, Delaware, Maine, Ohio, Oregon, Vermont, Virginia, West Virginia, and Wisconsin.

²⁵ Florida, Indiana, Iowa, Kentucky, Maryland, Michigan, Mississippi, Nebraska, New Hampshire, New York, Rhode Island, South Dakota, Texas, and Wyoming.

²⁶ Arizona, Arkansas, Colorado, Connecticut, Delaware, Illinois, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, North Dakota, Oregon, Pennsylvania, Utah, Vermont, Virginia, Washington, Wisconsin, and the District of Columbia.

²⁷ California, Colorado, Delaware, Illinois, Indiana, Louisiana, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Utah, Vermont, Virginia, West Virginia, and Wisconsin.

²⁸ Connecticut, Iowa, Missouri, Nebraska, and North Dakota.

²⁹ California, Colorado, Connecticut, Delaware, Illinois, Indiana, Iowa, Louisiana, Maryland, Minnesota, Nebraska, New Hampshire, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, South Dakota, Texas, Vermont, Wisconsin, and Wyoming.

³⁰ Arkansas, Colorado, Connecticut, Delaware, Illinois, Iowa, Maine, Maryland, Massachusetts, Minnesota, Nebraska, New Hampshire, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Texas, Tennessee, Utah, Vermont, Virginia, and Washington.

³¹ Illinois, Iowa, Minnesota, Oregon, Tennessee, and Texas.

³² Arkansas (or by privately owned stations), Connecticut, Delaware, Iowa, Massachusetts (also by privately owned stations), Minnesota, Nebraska (or by privately owned stations), New Jersey, Tennessee, Texas, and Washington.

States ³³ having inspection laws requires only specified types of commercial vehicles to be inspected, whereas in the other States all motor vehicles are subject to inspection. In three States ³⁴ the establishment of inspection stations by municipalities is authorized but not required.

³³ New York.

³⁴ Arkansas (by regulation), Minnesota, and Nebraska.



MOTOR-VEHICLE TRAFFIC CONDITIONS IN
THE UNITED STATES

LETTER

FROM

THE SECRETARY OF AGRICULTURE

TRANSMITTING

PURSUANT TO LAW, A SECTION OF A REPORT ON A
STUDY AND RESEARCH OF MOTOR-VEHICLE TRAFFIC
CONDITIONS IN THE UNITED STATES, ENTITLED
"SKILLED INVESTIGATION AT THE SCENE OF THE ACCI-
DENT NEEDED TO DEVELOP CAUSES," TOGETHER WITH
RECOMMENDATIONS OF MEASURES FOR THEIR IM-
PROVEMENT

IN SIX PARTS

PART 2

SKILLED INVESTIGATION AT THE SCENE OF THE
ACCIDENT NEEDED TO DEVELOP CAUSES

JANUARY 7, 1938.—Referred to the Committee on Roads
and ordered to be printed, with illustrations

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LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE,
Washington, January 6, 1938.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES,

DEAR MR. SPEAKER: There is transmitted herewith a report entitled "Skilled Investigation at the Scene of the Accident Needed to Develop Causes." This is the second of a series of reports based upon investigations conducted by this Department under authority of the act of June 23, 1936 (Public, No. 768, 74th Cong.), which authorized \$75,000 for a study of traffic conditions and measures for their improvement.

Other reports in the series deal with the following subjects: Non-uniformity of State Motor-Vehicle Traffic Laws, Inadequacy of State Motor-Vehicle Accident Reporting, Official Inspection of Vehicles, Case Histories of Fatal Highway Accidents, and the Accident-Prone Driver.

Very truly yours,

H. A. WALLACE, *Secretary.*

Enclosure.

The Board of Directors of the
 American Telephone and Telegraph
 Company, Inc. has the honor to
 acknowledge the receipt of your
 letter of the 14th inst. and in
 reply to inform you that the
 same has been forwarded to the
 proper authorities for their
 consideration.

Very truly yours,
 J. Edgar Hoover

LETTER OF SUBMITTAL

DEPARTMENT OF AGRICULTURE,
BUREAU OF PUBLIC ROADS,
Washington, January 5, 1938.

The SECRETARY OF AGRICULTURE.

DEAR MR. SECRETARY: In accordance with the requirements of the act of June 23, 1936 (Public, No. 768, 74th Cong.) which authorized \$75,000 for a study of traffic conditions and measures for their improvement, intensive studies have been made by this Bureau in cooperation with agencies of recognized standing in the field of traffic safety.

The results of these investigations have been included in a series of six reports. The second of the series entitled "Skilled Investigation at the Scene of the Accident Needed to Develop Causes," is submitted herewith. Other reports in the series deal with the following subjects: Non-Uniformity of State Motor-Vehicle Traffic Laws, Inadequacy of State Motor-Vehicle Accident Reporting, Official Inspection of Vehicles, Case Histories of Fatal Highway Accidents, and the Accident-Prone Driver.

Very truly yours,

THOMAS H. MACDONALD,
Chief of Bureau.

Enclosure.

ACKNOWLEDGMENTS

The work reported herein was carried on under the direction of the Bureau of Public Roads, Thomas H. MacDonald, Chief. The Bureau obtained the cooperation of a number of organizations and institutions that had previously worked with outstanding effect in the particular field investigated. Special arrangements were made with the Highway Research Board of the National Research Council to permit the interested organizations already engaged in cooperative research with the Board to be drawn upon for active participation in the investigation.

In order to benefit from the best thought of those who have given long and careful study to problems of highway safety, an advisory committee was invited to assist in the planning of the research and the preparation of the reports. The committee, composed of nationally recognized authorities in the field of traffic safety and representatives of organizations long active in the work, included the following members:

Dr. H. C. Dickinson, National Bureau of Standards, Chairman of the Highway Research Board.

Prof. C. J. Tilden, Yale University.

Dr. Alvah R. Lauer, Iowa State College.

Dr. Harry R. DeSilva, Harvard Bureau for Street Traffic Research.

Prof. Robbins B. Stoeckel, Yale University.

Sidney J. Williams, National Safety Council.

Burton W. Marsh, American Automobile Association.

L. W. McIntyre, American Motorists' Association.

Dr. Ralph Lee, Automobile Manufacturers' Association.

Col. A. B. Barber, Chamber of Commerce of the United States.

W. J. Davidson, Society of Automotive Engineers.

A. W. Whitney, National Conservation Bureau.

Arthur W. Brandt, American Association of State Highway Officials.

John Q. Rhodes, Jr., American Association of Motor Vehicle Administrators.

Studies were conducted with the assistance of organizations represented on the advisory committee and that of numerous other organizations.

In making this report particular acknowledgment is due the Michigan State police and its commissioner, Mr. Oscar G. Olander. The International Association of Chiefs of Police also cooperated through Lt. F. M. Kreml, director of its safety division, in developing the plan of the investigation. In the officer training program at East Lansing the association was represented by Mr. G. L. van Arsdall, formerly in charge of the accident prevention bureau of the Louisville, Ky., police department.

For the Bureau of Public Roads the research program and preparation of this report were under the general supervision of Mr. E. W. James, Chief of the Division of Highway Transport, assisted by Mr. William G. Eliot, 3d, highway economist. For the Highway Research Board, Mr. R. W. Crum, Director, was in charge. Mr. W. Sherman Smith, who was granted leave for the purpose from the civil engineering department of the University of Toledo, directed the studies in East Lansing, assisted by Mr. Howard W. Tillapaugh as technical investigator.

SKILLED INVESTIGATION AT THE SCENE OF THE ACCIDENT NEEDED TO DEVELOP CAUSES

Available reports on rural-highway accidents have usually been made by the drivers involved or by police officers untrained in methods of investigation. Reports on accidents resulting from serious violations of law cannot be depended upon to supply reliable evidence of a sort which tends to incriminate or which requires the observation of circumstances not superficially obvious. Police departments in an increasing number of cities have found that the investigation of motor-vehicle accidents on the spot, by specially trained mobile squads is a most effective means of determining the facts and establishing legal evidence against the persons at fault. Similar investigation of rural accidents, it is believed, would be very desirable for research into accident causes and as an aid to law enforcement.

Clearly, there are differences between urban and rural conditions, especially in regard to the relative areas to be covered and in the facilities for prompt reporting of accidents, which make the problem of accident investigation in rural areas much more difficult than that in cities. A telephone is not always accessible, and when the investigating officers are notified they may be many miles from the scene, and much of the evidence may be lost before they arrive.

To test the feasibility of studying rural-accident causes through technical investigations at the scene of accidents as soon as possible after their occurrence, the research project here reported was organized.

While the plans were being made, an opportunity developed for cooperation with the International Association of Chiefs of Police and the Michigan State police in a larger program of study, involving additional phases of the problem of accident reporting. The cooperation of the Michigan State police made possible the prompt investigation of accidents, with the assistance of its personnel, motor equipment, and radio-communication system. Also, representatives of the Bureau of Public Roads and the Highway Research Board were enabled to study the functioning of a typical State police organization in its accident reporting, accident analysis, and traffic law-enforcement activities and to advise with the State officials regarding possible improvements.

As an incidental piece of research, it was possible to analyze a large number of violation tickets and summonses previously issued by the State police, to discover any relationship that might exist between drivers' law violations and accident proneness. The International Association of Chiefs of Police assumed the responsibility for educating and training the troopers in approved methods for investigating and reporting highway accidents.

Although the study of Michigan State police accident reporting and analysis procedure occupied a large part of the investigators' time, it was concerned primarily with questions of technique in the handling of records, with a view to improving the then existing methods throughout the organization. It was accordingly of limited interest

and will not be discussed here at length. The general problem of accident reporting and analysis is dealt with in another report of this series.

FINDINGS

1. Accident investigation on a State-wide highway system comparable to that in cities where accident prevention bureaus have been formed will require more adequate personnel and equipment than are now generally available in a State highway patrol.

2. The work of a highway patrol on accident investigations cannot be most efficiently performed when the time of the officers is divided among many matters.

3. Because of the large mileage of roads to be covered, and inadequate means of communication, the immediate investigation of rural accidents by an "on call" accident squad except in limited areas is of doubtful feasibility.

4. A serious handicap to accident investigation on rural roads is the time that usually must elapse before accident investigators can reach the site, during which much evidence may be obscured or obliterated.

5. In order to assemble all the facts concerning a highway accident it is necessary that the physical evidence be accurately noted and competently interpreted along with the statements of participants and witnesses.

6. Case histories of accidents secured in this manner will be of great value in a fundamental study of highway-accident causes.

7. Of 143,600 drivers recorded by the Michigan State police since 1931 as having received violation tickets or summonses, or having been involved in accidents, only 2.3 percent have more than one record card against them. No significant relation was found between the number of violation tickets or summonses recorded against a driver and his recorded accident experience.

MICHIGAN STATE POLICE ORGANIZATION

The Michigan State police had its inception in a program of public protection during the World War and functioned for several years as the Michigan State troops. During 1919, 1,285 arrests were made and 28,491 miles of road patrolled. Six automobile wrecks were reported. In 1921 the State troops were reorganized as the department of public safety, including a uniformed corps to be known as the State police. By 1931 the annual mileage for State police patrols reached 1,680,000 miles, and in 1935 it exceeded 3,000,000 miles. In 1935 a further reorganization created the present Michigan State police. Among the duties of its safety and traffic division are to direct campaigns of safety and traffic education and to supervise the activities of the department in administering the laws pertaining to the proper recording of accident reports and statistics pertaining thereto.

For police work, the State of Michigan was, as of June 1, 1937, divided into 8 districts, each containing one or more posts, with a total of 37 posts in all. The total strength of all the posts was less than 200 officers and men. Among the duties of the trooper are the following:

1. Special duty:

- (a) Bodyguard for the Governor.
- (b) Educational work.

- (c) Traffic surveys.
- (d) Exhibits.
- (e) Demonstrations, talks, etc.
- 2. Criminal investigation, including assistance given to city, county, and Federal officers.
- 3. General complaints:
 - (a) Minor complaints.
 - (b) Investigations and general assistance.
- 4. Highway patrol:
 - (a) Investigation of questionable and abandoned vehicles.
 - (b) Enforcement of traffic laws.
 - (c) Enforcement of motor-vehicle laws.
- 5. Accident investigation, for the purpose of obtaining—
 - (a) Legal evidence for prosecution of the person responsible.
 - (b) Accurate and complete information for statistical needs.
- 6. Office work:
 - (a) Daily report: Summary of activities.
 - (b) Complaint report.
 - (c) Patrol report.
 - (d) Accident reports.
 - (e) Duplicates of all violation tickets, summonses, etc.
- 7. Court work:
 - (a) Arraigning of prisoners.
 - (b) Appearance in court in cases where involved.

The actual road-patrol work is very limited. Furthermore, it is the first duty to be eliminated when emergencies arise which require a concentration of men greater than a post or district can supply or when the number of complaints is so large that all available men must be assigned to investigating them. Table 1, compiled from daily post reports, shows for the month of November 1936 the activities of the State police by posts.

Inasmuch as the East Lansing area was selected for the special accident studies here reported, the work of that post is of particular interest. That post covers approximately 2,660 square miles, and includes Ingham, Clinton, Eaton, and portions of Barry, Ionia, Gratiot, and Shiawassee Counties. Within this area are 3 United States and 28 Michigan routes, which, together with the county roads, total about 7,000 miles of highway. The authorized strength in November 1936 was 19 officers and men. Five automobiles and five motorcycles were available for transportation and patrol work. Table 1 shows that the troopers of this post spent 1,060 hours on road patrol, compared with 1,477 hours on complaints and investigations. The total mileage traveled in connection with both duties was 18,570 miles. It is significant that during that time, and in that distance covered, only 36 violation or warning tickets and 21 summonses were issued and 7 arrests made for violations of traffic or motor-vehicle laws. In that same month 55 accidents were reported to the post.

The conclusion seems inevitable that efficient safety work, either in law enforcement or in accident investigation, cannot be achieved while the time of the troopers must be so largely devoted to other duties.

TABLE 1.—*Analysis of daily reports, Michigan State police posts, month of November 1936.*

Post	Men on duty		Hours on road patrol	Hours on complaints	Miles of road patrol			Complaints investigated		Violation tickets issued	Summons issued	Arrests		Accidents reported and investigated
	Daily average	Authorized strength			Trunk highway	County highway	Total	Traffic	Total			Traffic	Total	
Alpena.....	3.6	4	320	282	2,900	2,123	5,023	12	75	1	0	2	31	9
Bad Axe.....	1.9	2	405	85	2,846	1,218	4,064	(1)	38	16	4	2	11	7
Bay City.....	4.8	10	760	359	8,539	1,053	9,592	(1)	65	54	28	2	8	25
Blissfield.....	4.6	16	813	505	5,731	1,874	7,605	19	46	12	10	2	7	16
Brighton.....	2.9	3	507	88	4,877	360	5,237	16	38	2	0	4	11	11
Cheboygan.....	4.4	6	536	268	5,163	714	5,877	11	48	10	3	3	9	9
Detroit.....	6.0	8	826	180	4,315	5,298	9,613	17	197	43	5	2	17	18
East Lansing.....	12.6	19	1,060	1,477	13,763	4,807	18,570	78	246	36	21	6	37	55
Flint.....	4.4	7	791	275	15,980	1,093	17,073	33	89	59	45	10	21	27
Grand Haven.....	1.7	7	1,283	318	10,971	2,783	13,754	23	69	301	29	12	16	19
Iron Mountain.....	6.0	5	433	828	15,015	1,129	16,144	8	35	36	2	0	8	6
Jackson.....	7.9	9	1,038	249	12,236	2,308	14,544	37	121	66	30	13	28	32
Jonesville.....	5.6	7	941	132	9,421	1,815	11,236	13	61	140	36	2	18	16
L'Anse.....	3.0	4	281	132	3,846	401	4,247	17	50	5	5	2	12	8
Manistee.....	3.8	5	313	285	2,614	442	3,056	7	23	0	1	3	15	4
Manistique.....	1.7	2	224	79	2,428	448	2,876	0	7	11	7	0	13	9
Marquette.....	6.9	13	1,184	200	14,789	1,305	16,094	38	78	58	0	4	18	37
Mt. Pleasant.....	3.8	5	426	253	6,022	1,374	7,396	23	67	20	14	4	13	15
Newberry.....	5.6	6	958	203	12,558	977	13,535	19	89	39	11	4	26	20
New Buffalo.....	3.8	5	511	115	4,398	723	5,121	6	36	13	8	4	9	9
Paw Paw.....	5.4	8	879	194	7,116	892	8,008	25	75	38	17	8	25	16
Rockford.....	5.5	8	418	317	8,201	1,790	9,991	20	75	33	27	4	40	13
Rockwood.....	4.9	8	460	478	4,888	2,107	6,995	35	73	3	17	7	32	32
Romeo.....	4.2	5	410	316	3,510	2,503	6,013	22	71	18	22	7	25	16
Saint Clair.....	3.9	5	438	276	6,092	1,328	7,420	16	63	4	12	2	11	12
Traverse City.....	5.0	7	609	491	8,945	2,432	11,377	12	66	0	2	1	12	7
Wakefield.....	3.7	4	511	207	6,089	481	6,570	9	53	14	5	4	10	38
West Branch.....	5.2	4	675	1,279	6,876	1,511	8,387	(1)	97	1	5	3	48	14
White Pigeon.....	4.3	5	391	359	5,244	779	6,023	21	63	1	4	5	15	14
Xpsilanti.....	4.7	7	574	382	6,321	1,431	7,752	23	77	122	25	8	27	17
Total.....	144.7	194	19,047	10,750	204,104	47,603	251,707	562	2,256	1,138	348	128	551	532

1 Not reported.

ACCIDENT INVESTIGATION BY POLICE

Accidents are usually reported to the police by telephone by one of the persons involved, by a witness, or by someone among the first to arrive at the scene. Minor accidents are often reported directly at a police post by the driver. Still other reports are received from hospitals and garages, which are required by law to report when injured victims and wrecked cars are brought in for attention.

If a patrol car is in the vicinity of an accident when it is reported, a radio message is broadcast from the radio and communications division, directing the troopers in that car to investigate that accident. If no car in the field is available, one is sent from the nearest post. If no personnel can be assigned to the investigation, the sheriff of the respective county is notified and asked to conduct the inquiry. The Michigan State police are able to investigate approximately two-thirds of the reported rural accidents. The remainder are taken care of by the county sheriffs.

ACCIDENT INVESTIGATION BY SPECIAL ACCIDENT SQUAD

The major objective of this project was to study the feasibility of investigating accidents at the scene of their occurrence by specially trained personnel. With the cooperation of the State police, a research engineer on the staff of the Highway Research Board was assigned to duty at the East Lansing post, to investigate as many accidents occurring in that area as possible. During periods of high accident frequency he rode with the troopers in a patrol car as they traveled the roads in the course of their regular duties. While this method of getting to the accident scene was costly in terms of time spent, it proved more satisfactory than waiting for accident calls at the post headquarters, and incidentally provided an excellent opportunity to study traffic conditions, driving practices of the public, and enforcement policies of the State police.

The experience of this investigator, though limited, raises very clear doubts as to the practicability of a general program of investigation of rural accidents by special "accident squads." Although the East Lansing area is one of the high-accident areas of the State the frequency of accidents during his few months on duty was so low as to yield few opportunities for study. In a period of a little more than 4 months, it was possible for him to investigate only 32 accidents, of which 6 resulted fatally, 12 caused personal injuries but no deaths, and 14 caused no personal casualties. These accidents occurred on only 22 different dates, or on less than 1 day in 5. The maintenance of enough special personnel adequately to cover an entire State on the same basis is clearly out of the question. Even if a few troopers at each post were trained for duty as accident-investigation squads, the limited personnel at some of the posts, the great distances to be covered, and the frequent demands of other duties, would effectively prevent the investigation of a large proportion of the accidents. A police force limited to highway law enforcement would be subject to the same handicaps, though in a somewhat smaller degree.

The nearest approach to the city "accident squad" in a State police organization apparently is to be found in the careful training of each and every patrolman for adequate investigation and reporting of accidents. This would insure a maximum coverage in the most

efficient manner. The troopers could not be expected to make the scientific analysis of causes and circumstances that could be made by a qualified engineer, but much improvement could be had in statistical data, and much more effective law enforcement could be achieved through better preparation of legal evidence for use in court. The objective of a course of training given the Michigan State police troopers by a representative of the International Association of Chiefs of Police was to develop this general improvement in accident investigation and reporting.

TECHNICAL STUDY OF ACCIDENTS

Accident statistics on which our knowledge of rural accident causes depends are usually inadequate for scientific analysis. They are based on reports made either by interested parties, namely, the participants, or by police officers or highway employees who are required to submit such reports incidental to their other duties. Such reports are too often biased or perfunctory. The accident squads now working effectively in numerous cities are concerned primarily with securing legal evidence against traffic law offenders. In our search for knowledge of accident causes there is an urgent need to supplement the usual type of data by adequate field investigations, to determine not only the immediate causes but, if possible, the underlying or remote causes. To make these studies was the function of the investigator at the East Lansing police post representing the Highway Research Board.

In nearly every accident there is physical evidence as to just what happened, how it happened, and where it happened. Marks on the road surface or shoulder, the actual point of impact, the position of the cars after the impact, and the kind and extent of damage to the vehicles involved, are the chief clues which must be observed, recorded, and fitted together. In the evaluation of these data, training and experience in engineering and methods of analysis are most valuable. To determine properly just what series of causes has been responsible for any accident, every factor must be included, no matter how minor it may appear.

As a guide in checking off possible contributory factors, a detailed outline was prepared, listing every conceivable condition or circumstance that might ever be expected to play a part in the occurrence of an accident. Because this outline constitutes an impressive exhibit of the complexity of the accident problem in its many ramifications, it has been included with this report as appendix A.

Any technique which may be developed for special investigation of the causes of accidents will certainly be modified materially as experience makes improvement possible. The general plan evolved tentatively for this project must be regarded as subject to further revision and refinement. The work can best be described in its two major phases: (1) the actual field investigation, and (2) the organization of the data into a comprehensive summary report.

INVESTIGATION TECHNIQUE

Upon arrival at the accident scene, the investigator first gave any emergency assistance possible. This included helping the injured, calling ambulances or wrecking-cars, setting out warning flares and

directing traffic, or doing anything else that would assist the officers preliminary to making the detailed investigation. In rural accidents a prime requisite is to clear the highway and to keep traffic moving so that interested spectators will not expose themselves to additional accidents.

Thereafter the investigator examined the road for skid marks, and measured them before others might be superimposed upon them. If a vehicle had left the road, the shoulder was also similarly examined. The exact point of impact could usually be determined from tire marks, pavement scars, or broken glass. The final positions of the vehicles were noted, and their distances from the point of impact were measured. Sketches with notes were found very valuable, and in some cases photographs were taken of the general accident scene and of the individual vehicles to show the results of the accident to the best advantage. Pictures of the skid marks were sometimes found helpful in studying the case at a later date.

Whenever possible the investigator determined the condition of the brakes, lights, steering mechanism, and horn, and the visibility through the windshield. He talked with the drivers, and with any witnesses. He inquired into the driving experience of each driver, whether city or rural, and his general driving habits, especially with respect to speed. He secured the story of each witness. It is not unusual to find witnesses who have followed a car for some distance before it has been involved in an accident, and who can make very helpful statements as to the driver's apparent ability, speed, and observance of traffic laws. If the accident involved a pedestrian, an effort was made to determine his physical condition, eyesight, hearing, and alertness from persons acquainted with him.

Finally, the investigator observed and made notes of the roadway characteristics, such as alinement, type of surface, condition and width of roadway and shoulders, and the physical features beyond the shoulders, such as ditches, guard rails, trees, or other fixed objects. He determined the approximate sight distance from either or both directions. He noted the type of traffic control or aids that were present, such as signs, signals, center-line or lane markings, and whether or not they were functioning.

There are several methods of determining the probable speed of vehicles involved in accidents, but the most accurate is from skid marks left by the cars. From observation and experience the approximate coefficient of friction of the surface at the time of the accident can be estimated. Likewise, the character of the skid marks or tire burns gives definite evidence of the condition of all four brakes, assuming that the driver tried to make an emergency stop. From the skid marks, the condition of the cars, the relative speed at the moment of impact, and, according to the type of collision, the distance and direction a car travels after the collision, the probable approximate speed of the vehicle preceding the accident may be determined.

If a car is in such shape that it can be driven, an actual road test can be made to determine the condition of the brakes. Then in conjunction with the stopping distance at the known speed, the speed at which the vehicle must have been traveling to lay down any given length of skid marks may be computed.

Where cars actually leave the ground the speed necessary to "take off" can be computed if the distance from take-off to landing can be

measured and if the slope of the take-off or the drop from a level take-off is known or can be measured.

The use of these methods is illustrated in some of the reports of accident investigations shown herein.

It is evident that much tact is required of the investigator. Practically all of the data concerning the driver must come directly from the driver or from persons involved with him. Time must not be wasted on individuals who are apparently trying to deceive, unless there is no other source of information available. Experience has shown that in serious accidents drivers or persons in the vehicles seldom, if ever, remember any details of the accident or of events immediately preceding it. Witnesses are none too reliable. Events happen so quickly that in the excitement witnesses side by side will tell directly conflicting stories of what happened and what they did. For these reasons the interpretation of the physical evidence which may be found in a majority of accidents is by far the most reliable information to be had.

ACCIDENT ANALYSIS

For recording the circumstances and results of an accident, the standard report form of the Michigan State police was used. This was supplemented by a detailed written report which included a description of the roadway characteristics, a sketch of the scene showing the positions and courses of the vehicles involved, pictures if available, statements of drivers or witnesses made to the police officers subsequent to the accident, and a determination of the probable speed of the vehicles from physical evidence collected and interpreted according to the best judgment of the investigator.

Since in these studies it was not the aim of the investigator to place the legal responsibility but to determine the cause or causes of the accident from consideration of all the contributing factors, the value of the accident reports depended on their further analysis and the appraisal of the relative importance of all factors. An analysis sheet was devised on which were set down the estimated importance of the different factors on a percentage basis. After checking over all factors which might be contributory, the investigator recorded these in the proper place on the analysis sheet, giving such weight to the proximate and remote causes as seemed justifiable from the information and conclusions. Further experience and study are needed to determine the feasibility and value of this method of analysis, which is an adaptation of that developed for the study of aircraft accidents by the National Advisory Committee for Aeronautics.¹ The analysis sheet is shown in figure 1. The various contributing factors were listed on the sheet to facilitate an orderly arrangement of the proximate and remote causes of an accident and to permit a proportionate evaluation of each in relation to all the causes. The sheet was numbered (for convenience, the accident report number assigned to the police report was used) and the other items under "classification of accident" were filled out in accordance with the following code:

¹ National Advisory Committee on Aeronautics, Rept. No. 576, Aircraft Accidents: Method of Analysis, 1936.

Nature of accident:

- Code A. Head-on collision.
- B. Rear-end collision.
- C. Angle collision.
- D. Sideswipe—moving vehicle.
- E. Sideswipe—parked vehicle.
- F. Backing up.
- G. Noncollision.
 - 1. On straight road.
 - 2. On curve.
 - 3. On turn.
 - 4. On grade.
 - 5. At hillcrest.
 - 6. On level.
- H. At intersection.
- K. Between intersections.

Examples: Angle collision on a straight, level road, between intersections. Code C16K.

Rear-end collision on a grade at an intersection. Code B4H.

Results of accidents:

- Code A. Injury resulting in death within 90 days.
- B. Serious injury—fractures, severe lacerations, etc.
- C. Minor injuries.
- D. No personal injury.
 - 1. Total wreck of vehicle.
 - 2. Complete overhaul necessary.
 - 3. Major repairs necessary.
 - 4. Minor repairs necessary.
 - 5. No property damage.

Example: Car so badly damaged complete overhaul necessary. One man killed, two injured, one seriously. Code 2ABC.

Driver class:

- Code A. Commercial operators—(passenger car, bus and truck).
- B. Noncommercial operators driving over 15,000 miles per year.
- C. Noncommercial—driving 5,000 to 15,000 miles per year.
- D. Noncommercial—driving less than 5,000 miles per year.
 - 1. Male driver.
 - 2. Female driver.

Example: Man, who drives an average of 10,000 miles per year. Code 1C.

Car class:

- Code A. Passenger car.
- B. Light truck (under 1½ tons).
- C. Other trucks.
- D. Tractor-trailer, truck-trailer, etc.
- E. Bus.
- F. School bus.
- G. Taxicab.
- H. Motorcycle.
- I. Passenger car—house trailer.
 - 1. Less than 1 year old.
 - 2. 1 to 2 years.
 - 3. 2 to 3 years.
 - 4. 3 to 4 years.
 - 5. 4 to 5 years.
 - 6. 5 to 6 years.
 - 7. 6 to 7 years.
 - 8. 7 to 8 years.
 - 9. 8 years and older.

Example: 1936 passenger car. Code 2A.

Road class:

- Code A. Two or more lanes, hard surfaced. Good horizontal and vertical alinement (based on minimum sight distance of 800 feet); good riding qualities; properly marked (center-line or lane marking) with correct traffic control (signs, signals, etc.).
- B. Hard surfaced not in class A above.
- C. Good improved roads, gravel, treated gravel, cinder, slag, etc. Good alinement and riding qualities.
- D. Other roads not in class C above.
- E. All other roads.

Thirty of the accidents investigated and analyzed were summarized. Out of 100 percent representing all the immediate causes of these 30 accidents, 76 percent was assigned to the driver (or pedestrian), 5.3 to the car, 10.6 to the road, and 8.1 percent to miscellaneous and undetermined. Analysis of the various factors charged against the

CLASSIFICATION OF ACCIDENT				REMOTE CAUSES OF ACCIDENT												
NUMBER				DRIVER				CAR				ROAD				
NATURE				Fitness	Ability	Will										
RESULTS				Physical handicaps	Mental defects	Sensory defects	Training as operator	Knowledge of laws	Knowledge natural law	Mental sets	Predisposition	Distraction	Manufacture	Inspection	Maintenance	Design
DRIVER CLASS																
CAR CLASS																
ROAD CLASS																
IMMEDIATE CAUSES OF ACCIDENT																
DRIVER	ERRORS	Error of judgment														
		Poor technique														
		Carelessness														
	VIOLATIONS	Excessive speed														
		Improper passing														
		On wrong side of road														
		Failure to slow, intersec.														
		Improper turns														
		Disregard traffic contr.														
		Improper parking														
STRUCTURE	Body															
	Frame															
	Steering mechanism															
	Springs, knee-action															
	Axles															
	Windshield and glass															
EQUIPMENT	Wheels															
	Tires															
	Brakes															
	Lights															
ACCESSORIES	Free-wheel, - auto. clutch															
	Extra lights															
	Radio, sun-visor, etc.															
	Mirror															
ROAD	CHARACT.	Horizontal alignment														
		Vertical alignment														
		Road surface														
	CON- TROL APP.	Shoulders, ditches, etc.														
		Physical hazards														
MISC.	Traffic control															
	Illumination															
Undetermined																

FIGURE 1.—Accident analysis sheet.

driver shows 35.2 percent direct violations of existing laws and 40.8 percent errors on his part. The difficulty in getting the true picture here is that errors of the driver often included violations of which he was not aware until after the accident. Conversely, when the driver violated a law of which he was aware, the violation was in some cases due to errors of judgment and carelessness, and the relative

weight was split according to the best judgment of the investigator. An analysis of this summary of 30 accidents is given below. The percentages shown are the averages of the investigator's ratings of the importance of the various causal factors of the 30 accidents summarized. It should be emphasized that no general conclusions as to accident causes can be drawn from so small a group of accidents, and that in this analysis there is no intent to do so.

Analysis of causes of 30 accidents

Immediate causes of accident:

Driver (76 percent):

Errors (40.8 percent):

	Percent
Error of judgment.....	9.0
Poor technique.....	5.8
Carelessness.....	26.0

Violations (35.2 percent):

Excessive speed.....	14.5
Improper passing.....	4.7
On wrong side of road.....	3.2
Failure to slow, intersection.....	.5
Improper turns.....	10.0
Disregard traffic control.....	1.5
Improper parking.....	.8

Car (5.3 percent):

Structure (none):

Body.....	None
Frame.....	None
Steering mechanism.....	None
Springs, knee-action.....	None
Axles.....	None
Windshield and glass.....	None

Equipment (5.3 percent):

Wheels.....	3.2
Tires.....	.3
Brakes.....	1.8
Lights.....	None

Accessories (none):

Free-wheel, automatic clutch.....	None
Extra lights.....	None
Radio, sun visor, etc.....	None
Mirror.....	None

Road (10.6 percent):

Character (7.1 percent):

Horizontal alinement.....	2.0
Vertical alinement.....	1.9
Road surface.....	3.2

Appurtenances (0.8 percent):

Shoulders, ditches, etc.....	.3
Physical hazards.....	.5

Control (2.7 percent):

Traffic control.....	1.9
Illumination.....	.8

Miscellaneous (1.6 percent):

Weather.....	1.0
Light.....	.3
Speed.....	.3

Undetermined (6.5 percent)

Total.....	100.0
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Remote causes of accident:

Driver (74.3 percent):

Fitness (2.8 percent):

Physical handicaps.....	0.5
Mental defects.....	None
Sensory defects.....	2.3

Analysis of causes of 30 accidents—Continued

Remote causes of accident—Continued.

Driver (74.3 percent)—Continued.

Ability (37.5 percent):

	Percent
Training as operator.....	21.8
Knowledge of laws.....	7.7
Knowledge of natural law.....	8.0

Will (34 percent):

Mental sets.....	4.4
Predisposition.....	23.1
Distraction.....	6.5

Car (5.4 percent):

Manufacture.....	None
Inspection.....	2.4
Maintenance.....	3.0

Road (10.6 percent):

Design.....	4.5
Construction.....	3.2
Operation.....	1.8
Maintenance.....	1.1
Repair.....	None

Undetermined (9.7 percent).....

9.7

Total.....	100.0
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It is interesting to compare the investigator's opinion as recorded above with a simple numerical count of the proximate causes assigned by him to the 30 accidents. There were 23 causes listed, which appeared a total of 120 times. That is, there were 120 causes for the 30 accidents, or an average of 4 per accident. These are distributed as follows: Driver 75.8 percent; car 3.3 percent; road 15.8 percent; and miscellaneous 5.1 percent.

A number of illustrative accident cases are cited in appendix B.

STUDY OF LAW-VIOLATION RECORDS

One of the unsettled questions in the study of motor-vehicle accidents is the relation between traffic law violations and safety. If the law violators as a class are more likely to be involved in accidents than are the law-abiding drivers, then it should be possible to identify potential high-accident drivers by means of the violation records standing against them.

The troopers of the Michigan State police are instructed to watch for violations of traffic and motor-vehicle laws and to issue "violation tickets" or summonses or to make arrests, depending on the seriousness of the offense. In the course of the investigation here reported it was found that there were approximately 55,000 violation tickets, summonses, and arrest reports which had been received at the State police headquarters during the past 3 years but which had never been filed or analyzed in any way. It was believed that a study of these records in conjunction with the available records of drivers who had been involved in traffic accidents might indicate whether or not any correlation exists between a propensity to law violation and proneness to accidents.

The 55,000 violation tickets, summonses, and arrest reports were sorted, checked, and filed in the "Persons involved" file of the safety and traffic division, which contains a record of all persons involved in accidents reported to the State police. Following this, the entire file was searched for persons having two or more violations, two or more accidents, or one or more violations together with one or more accidents

charged against them. Out of an estimated 143,000 motor-vehicle drivers listed in the file, there were found only 3,260 or 2.3 percent for whom two or more cards were filed, and only 0.7 percent with 3 cards or more. These results are shown in detail in table 2.

The records are clearly too scattered to warrant any conclusions as to the proportion of accident or violation "repeaters" among an estimated total of 1,800,000 licensed drivers in Michigan. The data are further vitiated by the fact that in a great many instances a number of violation tickets, summonses or arrest reports carry the same date. Usually such multiple violation records cover a series of offenses apparently revealed in a single investigation by the police. Often-times a violation ticket and a summons for the same offense are issued on the same date, and in numerous other cases an accident results directly in charges of law violation. It does not seem reasonable to regard multiple related items of these types as "repeats." Of 175 drivers having 4 or more records against them, for example, 11 had all on a single date, 61 had them on only 2 separate dates, and 65 on only 3, leaving only 38 repeating on 4 different dates. Apparently the number of repeaters is greatly exaggerated by this duplication of dates.

TABLE 2.—Violations and accidents of drivers having 2 or more recorded against them

Drivers' record		Number of drivers	Drivers' record		Number of drivers
Number of violations	Number of accidents		Number of violations	Number of accidents	
0.....	2	553	3.....	1	43
0.....	3	132	3.....	2	7
0.....	4	8	3.....	3	1
0.....	5	2	4.....	0	90
0.....	6	3	4.....	1	11
1.....	1	623	4.....	2	3
1.....	2	49	5.....	0	36
1.....	3	9	5.....	1	3
2.....	0	1,037	6.....	0	10
2.....	1	232	7.....	0	4
2.....	2	25	8.....	0	3
2.....	3	2			
3.....	0	374	Total.....		3,260

Further analysis of these records showed no significant relation between the violation records and the accident experience of the individual drivers. This may be attributed to the relatively small number of cases in the statistical sample. Even if it were possible to show a positive correlation between violations and accidents, however, allowance would have to be made for the fact pointed out above, that many violation charges grew directly out of accidents. Clearly, to the extent that accidents and violation records are thus associated, a false predictability might be shown.

APPENDIX A

FACTORS CONTRIBUTING TO MOTOR VEHICLE ACCIDENTS

The number of possible accident causes is very great. As a guide to the study and analysis of accidents in the field, the investigator prepared, as a "check list," an outline covering every factor that might possibly contribute to the occurrence of an accident. This

outline is reproduced here primarily as an illustration of the complexity of the problem. The letter or letters opposite each item indicate the most practical source of information on each, together with alternative or secondary sources, as follows: O, personal observation; F, facts from individuals involved; W, information from witnesses; R, records; T, tests; and C, conclusions of investigators.

I. THE DRIVER (AND PEDESTRIAN, WHEN APPLICABLE)

A. Handicaps—Physical and mental deficiencies:

1. Physical:

(a) Loss of limb	OFC
1. Arm or hand	OFC
2. Leg or foot	OFC
(b) Loss of fingers	O
(c) General lack of strength or weight	TFC
(d) General ill health	FC
(e) High blood pressure	TF
(f) Paralysis and other defects	OF
(g) Right or left handed	OTF

2. Sensory defects:

(a) Eyesight	T
1. With or without glasses	TF
2. Color-blindness	T
3. Stereoscopic vision (depth perception)	T
4. Phorias	TO
5. Field of vision (tunnel vision)	T
6. Photophobia (sensitivity to glare)	T
7. Visual acuity	T
8. Ocular dominance	T
9. Astigmatism	T
10. Scotoma and other defects	T
(b) Hearing	TFC
(c) Reaction time	T
1. Sight	T
2. Sound	T
3. Touch	T
4. Rapidity of making decisions	TOC
(d) Motor control	TO
1. Hands	TO
2. Feet	TO
(e) Scope of attention	TO

3. Mental defects:

(a) Insanity	CRW
1. Chronic alcoholism	CRW
2. Epilepsy	CRW
3. Addiction to drugs	CRW
4. Other serious mental diseases	CRW

B. Ignorance—Lack of knowledge or skill:

1. General education:

(a) Schooling	FR
1. Number of years in school	FR
2. Age at leaving school	FR
3. Highest class reached	FR
(b) Language:	

1. Speaking or understanding	OCF
(a) English	OCF
(b) Other	OCF
2. Reading	TF
(a) English	TF
(b) Other	TF

(c) Understanding of the traffic problem in general

TC

2. Training as a motor-vehicle operator:

(a) Source of instruction	FC
1. Automobile dealer	F
2. Friend or relative	F
3. Self	F
4. Other	F

I. THE DRIVER—Continued

B. Ignorance—Lack of knowledge or skill—Continued.

2. Training as a motor-vehicle operator—Continued.

(b) Nature of instruction.....	FC
1. General instruction and road practice.....	FC
2. Formal course of instruction to form proper driving habits.....	F
(c) Period of time over which actual instruction extended.....	FC
(d) Experience up to present time.....	FC
1. Kind.....	FCW
(a) On country or suburban roads.....	FCW
(b) In city traffic.....	FCW
2. Amount.....	FCW
(a) Years.....	FCW
(b) Miles or miles per year.....	FCW
3. Driver's license.....	RF
(a) Kind and place.....	RF
(b) Length of time held.....	RF
(c) Number of times revoked or suspended.....	RF
(d) Total time revoked or suspended.....	RF
(e) Examination for license.....	FW
1. None.....	FWC
2. Superficial.....	FWC
3. Complete.....	FWC
4. Driving habits.....	FOWC
(a) Habitual speeds.....	WFC
(b) Daily distance in touring.....	FWC
(c) Method of making stops.....	TOWC
1. "Brake" driver.....	TOWC
2. "Accelerator" driver.....	TOWC
(d) Signal movements.....	TOWC
(e) Use of mirror.....	TOWC
(f) Anticipating action of "other fellow".....	TOWC
3. Knowledge of motor-vehicle laws:	
(a) State laws and road rules.....	TC
(b) City laws and ordinances.....	TC
(c) Penalties for violations.....	TC
(d) Significance of traffic control devices.....	TC
4. Knowledge of mechanics involved in driving ("natural laws"):	
(a) Effect of speed on:	
1. Stopping distances.....	TC
2. Curves.....	TC
3. Braking on curves.....	TC
4. Accelerating on curves.....	TC
5. Severity of accident.....	TC
(b) Effect of surface on:	
1. Stopping distance.....	TC
2. Safe speed on curves.....	TC
(c) Effect of light (natural or artificial) on:	
1. Safe-driving speeds.....	TC
2. Passing distances, etc.....	TC
(d) Other.....	TC
5. Knowledge of economics of driving.....	TC
C. Inadvertency—Lack of will to prevent:	
1. Mental sets:	
(a) Overgrown idea of rights.....	CW
(b) Willful violation of law.....	CW
(c) Showing off.....	CW
(d) Failure to allow for errors of others.....	TCW
(e) Faulty attitude—ideas, complexes, etc.:	
1. Noncooperative.....	TCW
2. Feeling that because others do it, it's all right.....	CWF
(f) Tendency to gamble.....	TCW
(g) Underestimation of importance of good driving.....	CW

I. THE DRIVER—Continued

C. Inadvertency—Lack of will to prevent—Continued.

2. Predispositions:

(a) Intoxication	TCW
1. "One drink"	TCW
2. Slight but noticeable	TCW
3. Hilarious	WOT
4. Locomotion impaired	WOT
(b) Monotony	FCW
1. Nothing expected to happen	FCW
2. Extremely fatigued	FCW
3. Asleep	FCW
(c) Preoccupation	FC
1. Daydreaming	FC
2. Thinking about other things	FC
3. Worry	FCW
(d) Hurry:	
1. Emergency (real or imagined)	FCW
2. Haste to keep an appointment	FCW
3. Haste to arrive home, office, resort, etc.	FCW
4. Habitual haste	WOC
(e) Excitability	COW
1. Irrascibility	COW
2. General nervousness	CFOW
3. Nervousness that prevented action	CFOW
(f) Previous accident experience	FR
1. Motor or traffic	FR
2. Industrial or home	FR
3. Distractions:	
(a) Conversing with companions	FCW
(b) Smoking	FCW
(c) Backseat driving	FCW
(d) Adjusting car, clothing, or load	FCW
(e) Watching something other than road	FCW
1. People on sidewalks	FCW
2. Advertising signs	FCW
3. Other automobiles	FCW
4. Signals	FC
(f) Sudden illness	CF
(g) Sudden distraction (bee sting, etc.)	FW
(h) "Girl friend"	FWC

II. THE CAR

A. Structural defects and hazards:

1. Bodies:

(a) Decrepit, unsafe	O
(b) High center of gravity	O
(c) Driver's position incorrect (with respect to wheel, pedals)	OT

2. Windshield, side glass, rear window:

(a) Discolored, cracked, or patched	O
(b) Defect such as to cause confusing or blinding light reflections	OFW
(c) Dirty, dusty, wet, fogged over	OFW
(d) Covered with snow or sleet	OFW
(e) Covered with stickers, pennants, etc.	OFW
(f) Replaced with cloth, cardboard, etc.	OFW

3. Steering mechanism:

(a) Shimmy	FWC
(b) Worn parts (kingbolts, tie-rod connections, worm gear, broken spider or rim)	OF
(c) Hard steering	
1. Parts too tight	FTC
2. Soft tires	FTC

4. Auxiliary (contributing to fire):

(a) Leaky carburetor	FC
(b) Faulty electrical system	FC
(c) Leaky exhaust pipe or muffler	FC

II. THE CAR—Continued

A. Structural defects and hazards—Continued.

- | | |
|--|-----|
| 5. Frame: | |
| (a) Warped or sprung | FW |
| (b) Broken | FTC |
| 6. Springs and knee-action mechanism: | |
| (a) Broken spring | OTC |
| (b) Broken spring clip | OTC |
| (c) Failure of any part of knee action | FTC |
| 7. Axles: | |
| (a) Front | FTC |
| (b) Rear | FTC |

B. Equipment:

- | | |
|--|-----|
| 1. Wheels | FWC |
| 2. Foot brakes: | |
| (a) Insufficient | T |
| (b) Not in adjustment | T |
| (c) Hard or slow to operate | T |
| 3. Emergency brakes: | |
| (a) Insufficient | T |
| (b) Defective ratchet | T |
| 4. Trailer brakes: | |
| (a) Failed to work | FWC |
| (b) Insufficient | TFC |
| (c) Not in adjustment | TWC |
| 5. Lights: | |
| (a) 1 headlight out | WFC |
| (b) 2 headlights out | WFC |
| (c) Taillight out | WTC |
| (d) Headlights in focus—insufficient candlepower | TFC |
| (e) Headlights out of focus—insufficient candlepower | TFC |
| (f) Headlights too high (glaring) candlepower correct | T |
| (g) Headlights too low (insufficient vision) candlepower correct | T |
| (h) Poor control of lights—dimmers, etc. | OFC |
| (i) Taillight improperly located | OWC |
| (j) Ineffective (or no) clearance lights on trucks | OWC |
| 6. Tires: | |
| (a) Improperly inflated (soft) | COW |
| (b) "Baldheads" | O |
| (c) Spotty wear | O |
| (d) Casing patched | FO |

C. Accessories and devices:

- | | |
|--------------------------------------|----|
| 1. Freewheeling and automatic clutch | FW |
| 2. Spotlight, sun visor, etc. | FW |
| 3. Radio | FW |
| 4. Rear-vision mirror | OF |
| 5. Nonstandard shifting sequence | OF |

D. Miscellaneous:

- | | |
|--------------------------|-----|
| 1. Trailers: | |
| (a) Too many | OFW |
| (b) Too long | TO |
| (c) No individual brakes | TO |
| (d) Poor coupling | TOF |
| (e) No safety chain | OFW |
| (f) Whipping | WF |

III. THE ROAD

A. Alinement:

1. Horizontal:

- | | |
|--|-----|
| (a) Curve, turn, reverse, hairpin, or compound curve | O |
| 1. Degree of curvature | OTC |
| 2. Radius | OTC |
| 3. Length | OT |
| 4. Length of spiral | OT |
| 5. Superelevation | T |
| 6. Crown | T |

III. THE ROAD—Continued

A. Alinement—Continued.

1. Horizontal—Continued.

(a) Curve, turn, reverse, hairpin, or compound curve—Con.

7. Extra widening..... OT

8. Direction (right or left)..... O

9. Minimum sight distance..... T

(b) Straight section..... O

1. Level..... OT

2. Vertical:

(a) Curve:

1. Rate of change..... T

2. Length..... T

3. Sight distance..... T

(b) Upgrade..... O

(c) Downgrade..... O

(d) Hill crest..... O

(e) Hill trough..... O

B. Surface:

1. Type:

(a) Brick..... O

(b) Concrete..... O

(c) Bituminous..... O

(d) Gravel, slag, etc..... O

(e) Earth..... O

(f) Block (other than brick)..... O

2. Width (paved or surfaced section)..... T

3. Condition:

(a) Well maintained, smooth riding..... OT

(b) Cracked, uneven, washboardy, rutted, etc..... O

4. Foreign material on surface:

(a) Water..... OFW

(b) Sleet, slush..... OFW

(c) Snow..... OFW

(d) Ice..... OFW

(e) Other—explain..... OFW

5. Texture (fine, open, hard, polished, etc.)..... OT

6. Approximate coefficient of friction ("f")..... TC

C. Shoulders, ditches, etc.:

1. Width of shoulders..... TC

2. Material..... O

3. Condition..... OT

4. Side slope..... OT

(a) Cut..... T

(b) Fill..... T

5. Depth of ditch..... OT

6. Width of ditch..... OT

D. Traffic control and aids..... OFW

1. Center line..... O

(a) Painted..... O

(b) Raised..... O

(c) Reflectorized..... O

2. Lane marking..... O

3. Yellow line (no crossing)..... O

4. Dividing or planting strip..... O

5. Traffic and channelizing islands..... O

6. Guard rail..... O

7. Railroad barrier..... O

8. Warning signs..... O

(a) Painted..... O

(b) Reflectorized..... O

(c) Standard or nonstandard..... O

9. STOP sign..... O

(a) Painted..... O

(b) Reflectorized..... O

(c) Flashing..... O

(d) Standard or nonstandard..... O

III. THE ROAD—Continued

D. Traffic control and aids—Continued.

10. Traffic signals:

- | | |
|---|-----|
| (a) In working order, or otherwise..... | OWT |
| (b) Standard or nonstandard..... | O |
| 1. Type..... | O |
| 2. Location..... | O |
| 3. Sequence of phases..... | O |

- | | |
|---|-----|
| 11. Railroad grade crossing protection..... | O |
| (a) Type—gates, watchman, wigwag, etc..... | O |
| (b) Functioning properly or otherwise..... | OWT |

E. Physical hazards..... OFWC

- | | |
|---|------|
| 1. Railroad crossing..... | O |
| (a) Center pedestal..... | O |
| 2. Intersecting road..... | O |
| (a) Primary (United States or State)..... | O |
| (b) Secondary (county)..... | O |
| (c) Local..... | O |
| 3. Bridge..... | O |
| 4. Culvert head wall..... | O |
| 5. Underpass..... | O |
| (a) Abutment..... | O |
| (b) Center support..... | O |
| 6. Trees, poles, etc..... | O |
| (a) On shoulder or within 8 feet of edge of road..... | OT |
| (b) On side, in ditch, or more than 8 feet from edge of road..... | OT |
| 7. Sight obstructions..... | OTFC |
| (a) Trees, brush, hedge, etc..... | OT |
| (b) Embankment..... | OT |
| (c) Buildings..... | OT |
| (d) Advertising signs..... | OT |
| 8. Other obstructions or hazards..... | FWC |
| (a) Obstruction in roadway (animal, stone, tree, wrecked car, etc)..... | FWC |
| (b) Pavement dip or bump..... | OFC |
| (c) Dust and smoke (obscured view)..... | FWC |

F. Illumination:

- | | |
|---|----|
| 1. Good, modern lighting..... | OT |
| (a) Entire section..... | O |
| (b) Particular hazard..... | O |
| 2. Light from other sources than headlights (abutting buildings, flares, poor street lights, etc.)..... | OT |
| 3. No lights..... | O |

IV. MISCELLANEOUS

- | | |
|---|------|
| A. Weather..... | OFWC |
| 1. Clear..... | OFW |
| 2. Cloudy..... | OFW |
| 3. Foggy..... | OFW |
| 4. Raining..... | OFW |
| 5. Sleeting..... | OFW |
| 6. Snowing..... | OFW |
| 7. Dust storm..... | OFW |
| B. Light: | |
| 1. Daylight..... | OFW |
| 2. Dusk or dawn..... | OFW |
| 3. Darkness..... | OFW |
| C. Speed—actual, if it can be determined..... | FWTC |
| D. Other contributing factors..... | FWTC |

APPENDIX B

ILLUSTRATIVE ACCIDENT CASES

A number of typical accident cases are here cited, with brief descriptions and analyses. It has not been possible to reproduce the police-report form in each case, but the essential details are given for each, together with the analysis forms and some supplementary material.

CASE A

The accident happened at 6:25 p. m., in clear weather, with dry road surface.

The driver of car No. 1, a 14-year old boy, with 6 months' driving experience, stated he was driving south on a secondary road at about 30 miles per hour but at the intersection with a trunk road, at which there is a reflecting STOP sign, he slowed down to 10 miles per hour, looked in each direction, saw only one car which he estimated was about a quarter mile west of him, then shifted into second gear and started across the pavement. He claimed his front wheels were across the pavement before the crash, that he did not see the other car at the moment of collision, and could remember nothing else. Car No. 2, a coach, eastbound, was struck just back of the left door, continued across the graveled drive of a gasoline station, struck a telephone pole with its right rear wheel, and turned on its right side against a wire fence. The driver of car No. 2 died 2½ hours later from a fractured skull.

From the physical condition of the two vehicles and the fixed objects involved, the investigator interpreted the accident as follows:

Car No. 1, a "pick-up" truck, slowed down at the STOP sign which is 55.5 feet from the north edge of the intersecting pavement. There are no obstructions to view, the intersecting road being clearly visible for about one-half mile west and one-quarter mile east. The driver of car No. 1 saw car No. 2 some distance down the road to the west, but did not correctly judge its speed, so shifted into second gear and started across the pavement. There were no skid marks in the gravel or on the concrete to show that he had applied the brakes, though the rear brakes were jammed on part way and locked in that position when the wrecker towed the truck away. From the condition of the truck, and the impact marks, it was evident that its driver swerved to the left to avoid the collision. The damage done indicates that his speed must have been over 10 miles per hour. At least two 40-gallon cans full of milk were thrown a distance of about 75 feet, and the truck was turned on its right side.

The driver of car No. 2 going east evidently at high speed undoubtedly saw the truck as it approached the intersection. There were no skid marks on the pavement to show that he anticipated a collision. After he saw the truck pull out, it was too late to stop and he drove onto the shoulder to avoid the collision. No skid marks could be found on the shoulder or in the graveled area in front of the gasoline station. The nearest person could not remember having heard a horn just before the crash. The pick-up truck (No. 1) struck the car (No. 2) just back of the left door, tearing off the left rear fender, and the left half of the differential and axle. Car No. 2 continued straight across the graveled area. The first mark showed that the left rear part of the car dragged the ground for about 16 feet before the car actually

"took off" into the ditch. At this same point the car hit a light $1\frac{1}{2}$ -inch steel post carrying a metal sign. The marks in the soft ground of the ditch indicated that the front wheels hit before the rear wheels, causing the rear end to swing south, strike and snap off a 12-inch telephone pole about 4 feet above the ground with the right rear wheel and fender just back of the hub cap. This evidently threw the left door open and the driver out. The car then careened on two wheels and turned on its right side against a net-wire fence.

Marks on the right rear fender where it hit the telephone pole showed clearly that the pole was snapped off almost instantly.

The driver was picked up near the telephone pole. His head injuries could have been caused by striking the pole.

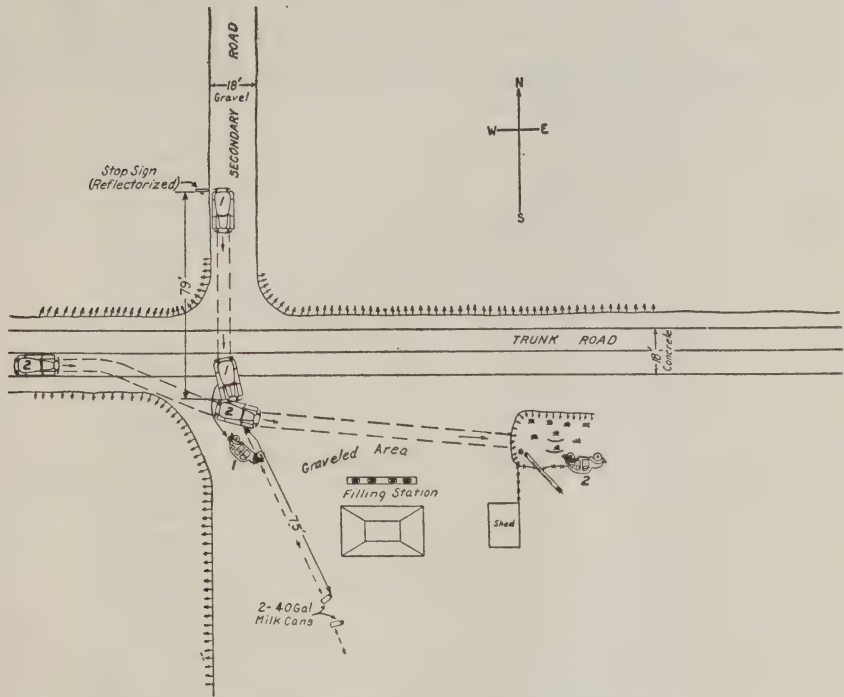


FIGURE 2.—Sketch of scene of accident, case A. Arrows indicate slope of ground.

Calculation of the probable speed of car No. 2, based on the distance from the edge of the bank to the point where it first struck in the ditch, together with the deceleration resulting from the previously dragging rear end, indicated its speed was about 58 miles per hour immediately after the collision.

Other calculations showed that the truck at 10 miles per hour would have traveled the 79 feet from the STOP sign to the point of collision in 5.18 seconds. In this same time car No. 2 would have traveled 456 feet if going at 60 miles per hour, or 532 feet if at 70 miles per hour.

Figure 2 shows a diagram of the accident scene. Figures 3 and 4 show the analysis sheets for the two vehicles. In this case major responsibility was placed on the driver of car No. 1, with 10 percent responsibility charged to the excessive speed of car No. 2.

MOTOR VEHICLE ACCIDENT ANALYSIS FORM																							
CLASSIFICATION OF ACCIDENT					REMOTE CAUSES OF ACCIDENT																		
NUMBER - - - Case A - - - Driver No. 1 - - -					DRIVER					CAR			ROAD										
NATURE - - - C16H - - -					Fitness		Ability		Will														
RESULTS - - - 3C - - -					Physical handicaps	Mental defects	Sensory defects	Training as operator	Knowledge of laws	Knowledge natural law	Mental sets	Predisposition	Distraction	Manufacture	Inspection	Maintenance	Design	Construction	Operation	Maintenance	Repair	Undetermined	
DRIVER CLASS - - - 1C - - -																							
CAR CLASS - - - 2B - - -																							
ROAD CLASS - - - A - - -																							
IMMEDIATE CAUSES OF ACCIDENT																							
90	DRIVER	65	VIOLATIONS	15	Error of judgment																		
				50	Poor technique																		
					Carelessness			40															
					Excessive speed								10										
					Improper passing																		
		25		On wrong side of road																			
				Failure to slow, intersec.																			
				Improper turns																			
			25	Disregard traffic contr.					25														
				Improper parking																			
CAR	STRUCTURE		Body																				
			Frame																				
			Steering mechanism																				
			Springs, knee-action																				
			Axles																				
	EQUIPMENT		Windshield and glass																				
			Wheels																				
			Tires																				
			Brakes																				
			Lights																				
ACCESSOR.		Free-wheel. - auto. clutch																					
		Extra lights																					
		Radio, sun-visor, etc.																					
		Mirror																					
ROAD	CHARACT. & CON- DIT. & REG. & ILL.		Horizontal alignment																				
			Vertical alignment																				
			Road surface																				
			Shoulders, ditches, etc.																				
			Physical hazards																				
MISC.	CON- DIT. & REG. & ILL.		Traffic control																				
			Illumination																				
			Weather																				
			Light																				
			Speed																				
Undetermined																							

FIGURE 3 — Analysis sheet for case A, car No. 1.

MOTOR VEHICLE ACCIDENT ANALYSIS FORM

CLASSIFICATION OF ACCIDENT				REMOTE CAUSES OF ACCIDENT																		
NUMBER - Case A - Driver No. 2 -				DRIVER						CAR			ROAD									
NATURE - C15H -				Fitness	Ability	Will																
RESULTS - 2A -				Physical handicaps	Mental defects	Sensory defects	Training as operator	Knowledge of laws	Knowledge natural law	Mental sets	Predisposition	Distraction	Manufacture	Inspection	Maintenance	Design	Construction	Operation	Maintenance	Repair	Undetermined	
DRIVER CLASS - 1C -																						
CAR CLASS - 2A -																						
ROAD CLASS - A -																						
IMMEDIATE CAUSES OF ACCIDENT																						
10	DRIVER	ERRORS	Error of judgment																			
			Poor technique																			
			Carelessness																			
		VIOLATIONS	10 Excessive speed									10										
			Improper passing																			
			On wrong side of road																			
			Failure to slow, intersec.																			
			Improper turns																			
			Disregard traffic contr.																			
			Improper parking																			
CAR	STRUCTURE	Body																				
		Frame																				
		Steering mechanism																				
		Springs, knee-action																				
		Axles																				
	EQUIPMENT	Windshield and glass																				
		Wheels																				
		Tires																				
		Brakes																				
		Lights																				
ACCESSOR.	Free-wheel, - auto. clutch																					
	Extra lights																					
	Radio, sun-visor, etc.																					
	Mirror																					
ROAD	CHARACT.	Horizontal alignment																				
		Vertical alignment																				
		Road surface																				
	CON- TROLL APP.	Shoulders, ditches, etc.																				
		Physical hazards																				
		Traffic control																				
MISC.	ILLUMINATION	Weather																				
		Light																				
		Speed 60-65 m.p.h.																				
Undetermined																						

FIGURE 4.—Analysis sheet for case A, car No. 2.

CASE B

In the second illustrative case a car operated by a drunken driver left the road 147 feet from where it struck a 12-inch soft maple tree. The time of occurrence was 7 p. m. The road where the accident occurred is straight and level. It is a high-crowned bituminous macadam road, 18 feet wide, with narrow shoulders only 2 feet wide. While the paved portion of the road was clear and dry, snow remained in the ditch and on the ground back of the ditch. At a point 50 feet from the tree that was struck, the car jumped a distance of 19 feet (front-wheel mark to front-wheel mark), continuing straight on, squarely into the tree. Calculations indicated that the car was traveling about 30 miles per hour when it made this jump.

The driver was unconscious when taken from the car, but regained consciousness before reaching the hospital. He was still in a drunken condition and could not explain the accident. Evidence on the left front window and side of the car indicated that he had been sick at his stomach just before the accident.

Figure 5 is a photograph of the accident scene.

Figure 6 shows the analysis sheet for the accident. Ninety percent responsibility is charged to the driver, 10 percent to the road.

CASE C

This accident occurred at 12:45 a. m. The driver of car No. 1 had just passed through the intersection of two State highways. Beyond the intersection his route curved to the right. He was evidently traveling at such a speed that he could not stay on his side of the road and was in the left-hand lane of traffic with his two left wheels off the pavement when he struck car No. 2 head-on. Car No. 2 had its two right wheels off the pavement on its own side of the road. The road at this point has a two-lane concrete pavement, with an extra widening of about 8 feet on the inside of the curve. There is no superelevation. The road surface was dry at the time of the accident. The driver of car No. 1 was well acquainted with this road, and the sight distance is sufficient. He admitted having had some beer previous to the accident, but it was not possible to determine his condition at the time of the accident.

Each car had two occupants, and all were injured. Both passengers and one driver received their cuts on the head from the same cause, the metal strip just above the windshield glass, which laps over and holds the upholstery.

In this case the entire responsibility was placed on car No. 1, as shown in the analysis sheets, figures 7 and 8.

CASE D

This accident occurred at 2:35 p. m., during a rain.

Car No. 1, attempting to turn left from a trunk highway into a secondary road from behind a light-delivery truck, drove head-on into a tractor-semitrailer combination carrying a load of four new automobiles, which was driven into a ditch in an effort to avoid the collision. Three persons in car No. 1 were injured. The tractor driver stated that he was driving at about 35 miles per hour when



FIGURE 5.—Scene of accident, (case B), looking east, showing the road and roadside characteristics. The tree, just off the road in the center of the picture, was hit by the car.

MOTOR VEHICLE ACCIDENT ANALYSIS FORM

CLASSIFICATION OF ACCIDENT				REMOTE CAUSES OF ACCIDENT																		
NUMBER - Case B NATURE - A1OK (Fixed Object) RESULTS - 3B DRIVER CLASS - 1X CAR CLASS - 4A ROAD CLASS - B				DRIVER						CAR		ROAD										
				Fitness	Ability	Will																
				Physical handicaps	Mental defects	Sensory defects	Training as operator	Knowledge of laws	Knowledge natural law	Mental sets	Predisposition	Distraction	Manufacture	Inspection	Maintenance	Design	Construction	Operation	Maintenance	Repair	Undetermined	
IMMEDIATE CAUSES OF ACCIDENT																						
90	DRIVER	70	ERRORS	Error of judgment																		
			70	Poor technique																		
		20	VIOLATIONS	70	Carelessness								70									
				10	Excessive speed								10									
				10	Improper passing																	
				10	On wrong side of road									10								
					Failure to slow, intersec.																	
					Improper turns																	
					Disregard traffic contr.																	
					Improper parking																	
	CAR	STRUCTURE	Body																			
			Frame																			
			Steering mechanism																			
			Springs, knee-action																			
			Axles																			
		EQUIPMENT	Windshield and glass																			
			Wheels																			
			Tires																			
			Brakes																			
			Lights																			
ACCESSORIES	Free-wheel, - auto. clutch																					
	Extra lights																					
	Radio, sun-visor, etc.																					
	Mirror																					
10	ROAD	CHARACTER	Horizontal alignment																			
			Vertical alignment																			
			Road surface																			
		APP.	5 Shoulders, ditches, etc.													5						
			5 Physical hazards														5					
			CON- TROL	Traffic control																		
Illumination																						
	MISC.	Weather																				
		Light																				
		Speed 30 (+) m.p.h.																				
Undetermined																						

FIGURE 6.—Analysis sheet for case B.

MOTOR VEHICLE ACCIDENT ANALYSIS FORM

CLASSIFICATION OF ACCIDENT				REMOTE CAUSES OF ACCIDENT											
NUMBER --- Case C --- Veh. No. 1 ---				DRIVER				CAR		ROAD					
NATURE --- A 26K ---				Fitness	Ability	Will									
RESULTS --- 2BB ---				Physical handicaps	Mental defects	Sensory defects	Training as operator	Knowledge of laws	Knowledge natural law	Mental sets	Predisposition	Distraction	Manufacture		
DRIVER CLASS --- 1C ---													Inspection		
CAR CLASS --- 2A ---													Maintenance		
ROAD CLASS --- B ---													Design		
													Construction		
													Operation		
													Maintenance		
													Repair		
													Undetermined		
IMMEDIATE CAUSES OF ACCIDENT															
60	DRIVER	ERRORS	15	Error of judgment			15								
				Poor technique											
			5	Carelessness					5						
			30	Excessive speed					30						
				Improper passing											
		VIOLATIONS	10	On wrong side of road			10								
				Failure to slow, intersec.											
				Improper turns											
				Disregard traffic contr.											
				Improper parking											
CAR	STRUCTURE		Body												
			Frame												
			Steering mechanism												
			Springs, knee-action												
			Axles												
	EQUIPMENT		Windshield and glass												
			Wheels												
			Tires												
			Brakes												
			Lights												
ACCESSOR.		Free-wheel. - auto. clutch													
		Extra lights													
		Radio, sun-visor, etc.													
		Mirror													
	ROAD	25	Horizontal alignment									25			
		Vertical alignment													
5		Road surface									5				
		Shoulders, ditches, etc.													
		Physical hazards													
40	CON- TROL APP.	10	Traffic control												
		10	Illumination (Lack of)									10			
MISC.		Weather	Clear												
		Light	Darkness												
		Speed	45 m.p.h.												
Undetermined															

FIGURE 7.—Analysis sheet for case C, vehicle No. 1.

MOTOR VEHICLE ACCIDENT ANALYSIS FORM

CLASSIFICATION OF ACCIDENT				REMOTE CAUSES OF ACCIDENT																	
NUMBER - Case C		Veh. No. 2		DRIVER			CAR			ROAD											
NATURE	RESULTS	DRIVER CLASS	CAR CLASS	ROAD CLASS	Fitness	Ability	Will														
A26K	2BB	1C	2A	B																	
				Physical handicaps	Mental defects	Sensory defects	Training as operator	Knowledge of laws	Knowledge natural law	Mental sets	Predisposition	Distraction	Manufacture	Inspection	Maintenance	Design	Construction	Operation	Maintenance	Repair	Undetermined
IMMEDIATE CAUSES OF ACCIDENT																					
DRIVER	VIOLATIONS	ERRORS	Error of judgment																		
		Poor technique																			
		Carelessness																			
		Excessive speed																			
		Improper passing																			
		On wrong side of road																			
		Failure to slow, intersec.																			
		Improper turns																			
CAR	STRUCTURE	Body																			
		Frame																			
		Steering mechanism																			
		Springs, knee-action																			
		Axles																			
		Windshield and glass																			
		Wheels																			
		Tires																			
ROAD	EQUIPMENT	Brakes																			
		Lights																			
		Free-wheel. - auto. clutch																			
		Extra lights																			
		Radio, sun-visor, etc.																			
		Mirror																			
		Horizontal alignment																			
		Vertical alignment																			
MISC.	CONTR.	Road surface																			
		Shoulders, ditches, etc.																			
		Physical hazards																			
		Traffic control																			
		Illumination																			
		Weather																			
		Light																			
		Speed																			
Undetermined																					

FIGURE 8.—Analysis sheet for case C, vehicle No. 2.

car No. 1 pulled out from behind the delivery truck about two car lengths away, evidently intending to make a left turn. The driver of car No. 1, interviewed at the hospital, said he had been following the light truck. He was talking with companions and did not remember seeing anything coming from the other direction when he started to make his left turn. Figure 9 is a diagram of the accident scene.

The road at the scene is straight, with a 20-foot concrete pavement and 8-foot shoulders. There is a ditch about 4 feet deep at the side of the roadway.

Figure 10 shows the analysis of this accident. Entire responsibility is placed on the driver of car No. 1. The analysis sheet for car No. 2 is not included since no entries were made indicating either

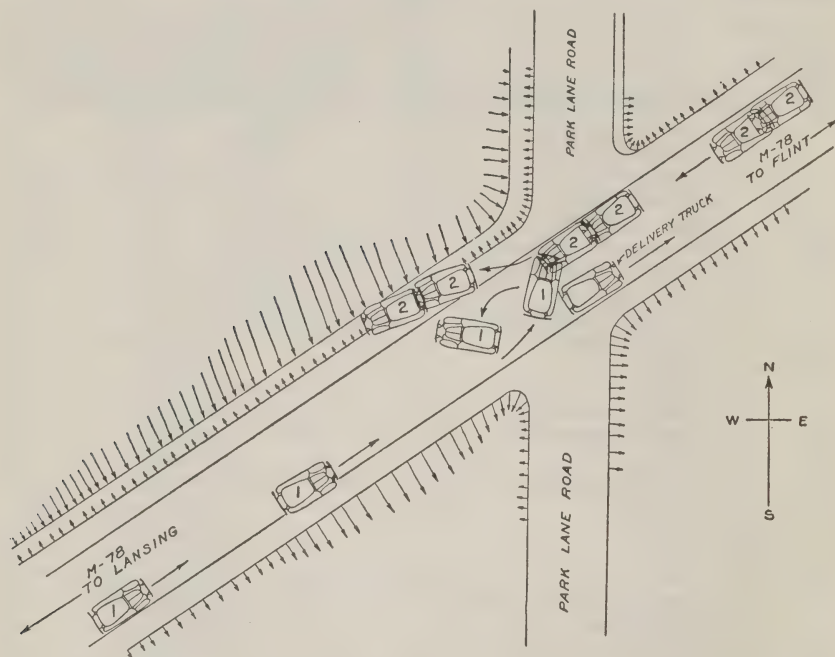


FIGURE 9.—Sketch of scene of accident, case D. Arrows indicate slope of ground.

immediate or remote responsibility. Figures 11 and 12 show what happened to the vehicles involved.

CASE E

This accident happened at 11:40 p. m. on a clear night at the intersection of a private drive and a rural highway. The driver of car No. 1 attempted to pass car No. 2 just as the latter pulled to the center of the road preparatory to turning left into the private drive. The driver of car No. 1 claims he sounded his horn, but car No. 2 continued to the left. The driver of car No. 1 locked all four wheels and skidded 54 feet to the point of impact, striking car No. 2 in the rear, then continued on for 42 feet. Car No. 2 went 66 feet from the point of impact, stopping on the left side of the road. The driver of car No. 1 and a passenger in car No. 2 were injured.

MOTOR VEHICLE ACCIDENT ANALYSIS FORM

CLASSIFICATION OF ACCIDENT				REMOTE CAUSES OF ACCIDENT																			
NUMBER - Case D - - - - - Veh. No. 1 - - - - -					DRIVER			CAR			ROAD												
NATURE - - - - - A14H - - - - -					Fitness	Ability	Will																
RESULTS - - - - - 1BBB - - - - -					Physical handicaps	Mental defects	Sensory defects	Training as operator	Knowledge of laws	Knowledge natural law	Mental sets	Predisposition	Distraction	Manufacture	Inspection	Maintenance	Design	Construction	Operation	Maintenance	Repair	Undetermined	
DRIVER CLASS - - - - - 1C - - - - -																							
CAR CLASS - - - - - 9A - - - - -																							
ROAD CLASS - - - - - B - - - - -																							
IMMEDIATE CAUSES OF ACCIDENT																							
100	DRIVER	100	ERRORS	Error of judgment																			
				Poor technique																			
		VIOLATIONS	100	Carelessness		50		50															
			Excessive speed																				
			Improper passing																				
			On wrong side of road																				
			Failure to slow, intersec.																				
			Improper turns																				
			Disregard traffic contr.																				
			Improper parking																				
CAR	STRUCTURE		Body																				
		Frame																					
		Steering mechanism																					
		Springs, knee-action																					
		Axles																					
		Windshield and glass																					
	EQUIPMENT		Wheels																				
		Tires																					
		Brakes																					
		Lights																					
ACCESSOR.		Free-wheel, - auto. clutch																					
	Extra lights																						
	Radio, sun-visor, etc.																						
	Mirror																						
ROAD	CHARACT.		Horizontal alignment																				
		Vertical alignment																					
		Road surface																					
	APP.		Shoulders, ditches, etc.																				
		Physical hazards																					
		Traffic control																					
MISC.	CON- TROL		Weather																				
		Light																					
		Speed																					
Undetermined																							

FIGURE 10.—Analysis sheet for case D, vehicle No. 1.

MOTOR VEHICLE ACCIDENT ANALYSIS FORM														
CLASSIFICATION OF ACCIDENT					REMOTE CAUSES OF ACCIDENT									
NUMBER - Case E - - - - - Veh. No. 1 - -					DRIVER			CAR			ROAD			
NATURE - - - - - B16K - - - - -					Fitness	Ability	Will							
RESULTS - - - - - 3C - - - - -					Physical handicaps	Mental defects	Sensory defects	Training as operator	Knowledge of laws	Knowledge natural law	Mental sets	Predisposition	Distraction	Manufacture
DRIVER CLASS - - - - - 1C - - - - -														
CAR CLASS - - - - - 1A - - - - -														
ROAD CLASS - - - - - B - - - - -														
IMMEDIATE CAUSES OF ACCIDENT														
50	DRIVER	10	ERRORS	10	Error of judgment				10					
					Poor technique									
					Carelessness									
		40	VIOLATIONS	30	Excessive speed				30					
				10	Improper passing				10					
					On wrong side of road									
					Failure to slow, intersec.									
					Improper turns									
					Disregard traffic contr.									
					Improper parking									
CAR	STRUCTURE		Body											
			Frame											
			Steering mechanism											
			Springs, knee-action											
			Axles											
			Windshield and glass											
	EQUIPMENT		Wheels											
			Tires											
			Brakes											
			Lights											
	CHARACT. ACCESSOR.		Free-wheel. - auto. clutch											
			Extra lights											
			Radio, sun-visor, etc.											
			Mirror											
	ROAD	CHARACT. APP.		Horizontal alignment										
			Vertical alignment											
			Road surface											
CON- TROL			Shoulders, ditches, etc.											
			Physical hazards											
			Traffic control											
MISC.		Illumination												
		Weather												
		Light												
	Speed													
Undetermined														

FIGURE 13.—Analysis sheet for case E, vehicle No. 1.

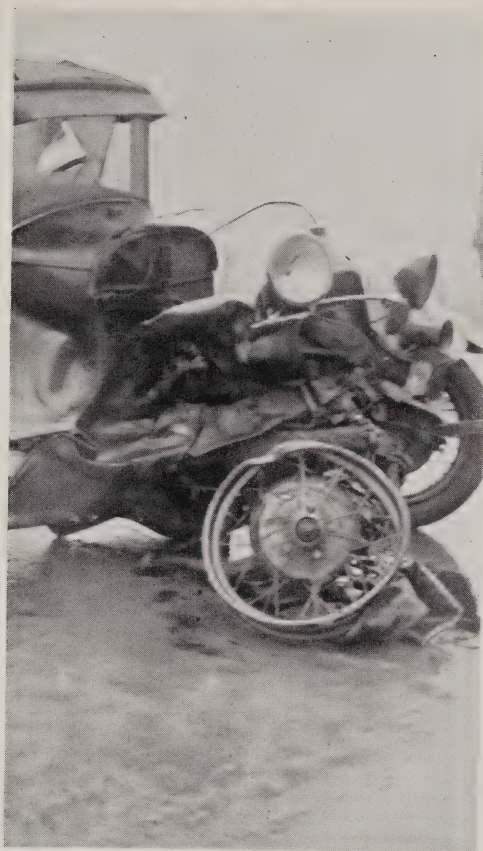


FIGURE 11.—Damage to vehicle No. 1 in accident described as case D.



FIGURE 12.—Damage to vehicle No. 2 in accident described as case D.

MOTOR VEHICLE ACCIDENT ANALYSIS FORM																					
CLASSIFICATION OF ACCIDENT				REMOTE CAUSES OF ACCIDENT																	
NUMBER - Case E - Veh. No. 2				DRIVER								CAR				ROAD					
NATURE - B16K				Fitness		Ability		Will													
RESULTS - 4B				Physical handicaps	Mental defects	Sensory defects	Training as operator	Knowledge of laws	Knowledge natural law	Mental sets	Predisposition	Distraction	Manufacture	Inspection	Maintenance	Design	Construction	Operation	Maintenance	Repair	Undetermined
DRIVER CLASS - 1C																					
CAR CLASS - 7A																					
ROAD CLASS - B																					
IMMEDIATE CAUSES OF ACCIDENT																					
50	DRIVER	20	ERRORS	20	Error of judgment																
					Poor technique																
					Carelessness																
					Excessive speed																
					Improper passing																
		30	VIOLATIONS		On wrong side of road																
					Failure to slow, intersec.																
					Improper turns																
					Disregard traffic contr.																
					Improper parking																
CAR	STRUCTURE		Body																		
			Frame																		
			Steering mechanism																		
			Springs, knee-action																		
			Axles																		
	EQUIPMENT		Windshield and glass																		
			Wheels																		
			Tires																		
			Brakes																		
			Lights																		
ACCESSORY		Free-wheel, - auto. clutch																			
		Extra lights																			
		Radio, sun-visor, etc.																			
		Mirror																			
ROAD	CONTR. TRAF. APP.	CHARACT.		Horizontal alignment																	
				Vertical alignment																	
				Road surface																	
				Shoulders, ditches, etc.																	
				Physical hazards																	
MISC.				Weather Clear																	
				Light Darkness																	
				Speed 15-20 m.p.h.																	
Undetermined																					

FIGURE 14.—Analysis sheet for case E, vehicle No. 2.

The pavement was macadam, 20 feet wide, with medium crown and very narrow shoulders.

From the length of the skid mark, the brake factor for good four-wheel brakes, and the coefficient of friction, it was calculated that the car reduced speed by 35 miles per hour during the skid. The estimated difference in speed at the moment of impact was 15 miles per hour, and since the speed of car No. 2 was about 15 miles per hour, the initial speed of car No. 1 was about 35 plus 15 plus 15 or 65 miles per hour.

Figures 13 and 14 show the analysis sheets for this accident, the responsibility in this case being equally divided between the two drivers.



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MOTOR-VEHICLE TRAFFIC CONDITIONS IN
THE UNITED STATES

LETTER

FROM

THE SECRETARY OF AGRICULTURE

TRANSMITTING

PURSUANT TO LAW, A SECTION OF A REPORT ON A STUDY
AND RESEARCH OF MOTOR-VEHICLE TRAFFIC CONDI-
TIONS IN THE UNITED STATES, ENTITLED "INADE-
QUACY OF STATE MOTOR-VEHICLE ACCIDENT REPORT-
ING," TOGETHER WITH RECOMMENDATIONS OF MEAS-
URES FOR THEIR IMPROVEMENT

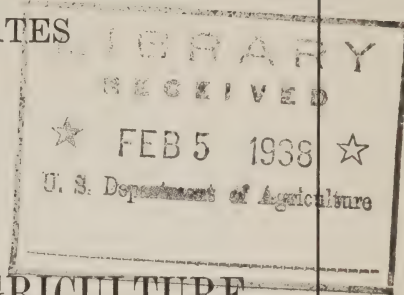
IN SIX PARTS

PART 3

INADEQUACY OF STATE MOTOR-VEHICLE
ACCIDENT REPORTING

JANUARY 7, 1938.—Referred to the Committee on Roads
and ordered to be printed, with illustrations

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1938



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Completeness of accident reporting.....	3
Uniformity of records.....	12
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LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 6, 1938.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

DEAR MR. SPEAKER: There is transmitted herewith a report entitled "Inadequacy of State Motor-Vehicle Accident Reporting." This is the third of a series of reports based upon investigations conducted by this Department under authority of the act of June 23, 1936 (Public, No. 768, 74th Cong.), which authorized \$75,000 for a study of traffic conditions and measures for their improvement.

Other reports in the series deal with the following subjects: Non-uniformity of State Motor-Vehicle Traffic Laws, Skilled Investigation at the Scene of the Accident Needed to Develop Causes, Official Inspection of Vehicles, Case Histories of Fatal Highway Accidents, and The Accident-Prone Driver.

Very truly yours,

H. A. WALLACE, *Secretary.*

Enclosure.

Two Brethren, The House of
Dear Mr. Speaker: There
filled "third class" of 25
This is the first of a
directed by this Department
1930 (Public No. 705, 74th
study of traffic conditions
Office report in 1931 and
uniformity of State 31
ion at the scene of the accident
Investigation of Traffic (1931)
of the Accident-From
Very truly,
Yours truly,

Enclosure.

LETTER OF SUBMITTAL

DEPARTMENT OF AGRICULTURE,
BUREAU OF PUBLIC ROADS,
Washington, January 5, 1938.

THE SECRETARY OF AGRICULTURE.

DEAR MR. SECRETARY: In accordance with the requirements of the act of June 23, 1936 (Public, No. 768, 74th Cong.), which authorized \$75,000 for a study of traffic conditions and measures for their improvement, intensive studies have been made by this Bureau in cooperation with agencies of recognized standing in the field of traffic safety.

The results of these investigations have been included in a series of six reports. The third of the series, entitled "Inadequacy of State Motor-Vehicle Accident Reporting," is submitted herewith. Other reports in the series deal with the following subjects: Nonuniformity of State Motor-Vehicle Traffic Laws, Skilled Investigation at the Scene of the Accident Needed to Develop Causes, Official Inspection of Vehicles, Case Histories of Fatal Highway Accidents, and The Accident-Prone Driver.

Very truly yours,

THOMAS H. MACDONALD,
Chief of Bureau.

Enclosure.

THE LIBRARY OF THE
 DEAN A. H. BARNETT
 the act of June 23, 1901 (Public
 Law 273, 600) for a study of
 improvement, legislative, and
 cooperation with agencies
 traffic safety.
 The results of these studies
 of six reports. The first of the series
 which is the first of the series
 reports the series deal with
 of State Motor Vehicle Traffic Laws
 of the Department of the
 of 761 pages, and contains a
 Appendix

ACKNOWLEDGMENTS

The work reported herein was carried on under the direction of the Bureau of Public Roads, Thomas H. MacDonald, Chief. The bureau obtained the cooperation of a number of organizations and institutions that had previously worked with outstanding effect in the particular field investigated. Special arrangements were made with the Highway Research Board of the National Research Council to permit the interested organizations already engaged in cooperative research with the Board to be drawn upon for active participation in the investigation.

In order to benefit from the best thought of those who have given long and careful study to problems of highway safety, an advisory committee was invited to assist in the planning of the research and the preparation of the reports. The committee, composed of nationally recognized authorities in the field of traffic safety and representatives of organizations long active in the work, included the following members:

Dr. H. C. Dickinson, National Bureau of Standards, Chairman of the Highway Research Board.

Prof. C. J. Tilden, Yale University.

Dr. Alvh R. Lauer, Iowa State College.

Dr. Harry R. DeSilva, Harvard Bureau for Street Traffic Research.

Prof. Robbins B. Stoeckel, Yale University.

Sidney J. Williams, National Safety Council.

Burton W. Marsh, American Automobile Association.

L. W. McIntyre, American Motorists' Association.

Dr. Ralph Lee, Automobile Manufacturers' Association.

Col. A. B. Barber, Chamber of Commerce of the United States.

W. J. Davidson, Society of Automotive Engineers.

A. W. Whitney, National Conservation Bureau.

Arthur W. Brandt, American Association of State Highway Officials.

John Q. Rhodes, Jr., American Association of Motor Vehicle Administrators.

Studies were conducted with the assistance of organizations represented on the advisory committee and that of numerous other organizations.

For the Bureau of Public Roads the research program and preparation of this report were under the general supervision of Mr. E. W. James, Chief of the Division of Highway Transport, assisted by Mr. William G. Eliot, 3d, highway economist. For the Highway Research Board, Mr. R. W. Crum, director, was in charge. Mr. Peter J. Stupka, formerly with the safety and traffic engineering department of the American Automobile Association, conducted the research and organized the material.

INADEQUACY OF STATE MOTOR-VEHICLE ACCIDENT REPORTING

In any systematic study of conditions affecting accident occurrence on streets and public highways the first important requirement is knowledge of the frequency of accidents and reasonably complete information as to the circumstances surrounding them. With these data available the problem of motor-vehicle accidents is open to attack along any of a number of lines including regulation, law enforcement, driver control, highway improvement, and public education.

To ascertain the practices of the several States in the collection and analysis of these basic data, research was undertaken, the object of which was to study the existing laws, regulations, and practices of the several States relating to the reporting of motor-vehicle accidents and the uses that are made of accident data. Specifically the project included the following major considerations:

1. Legal and administrative requirements for reporting motor vehicle accidents.
2. Office procedure for handling accident reports.
3. Uses of accident reports and data.

EXTENT OF SURVEY

Thirty-eight States were visited to obtain first-hand information on the practices followed by State motor-vehicle, police, highway patrol, and highway departments in reporting motor-vehicle accidents, handling reports, summarizing accident data, and using the reports and data. These States included all that could be covered by the field investigator on a carefully planned itinerary within the time available, as follows:

Alabama	Maine	Oklahoma
Arizona	Maryland	Oregon
California	Massachusetts	Pennsylvania
Colorado	Michigan	Rhode Island
Connecticut	Minnesota	Texas
Delaware	Missouri	Utah
Georgia	Nebraska	Vermont
Idaho	New Hampshire	Virginia
Illinois	New Jersey	Washington
Indiana	New Mexico	West Virginia
Iowa	New York	Wisconsin
Kansas	North Carolina	Wyoming
Louisiana	Ohio	

A limited amount of legal data for other States, readily available without personal investigation in the field, has been incorporated in this report.

The survey was made between December 15, 1936, and May 1, 1937. There were 44 State legislatures in session during the early months of

1937, and the enactment of new legislation subsequent to the collection of information for this report has altered conditions in certain details. An effort has been made to revise all data as to legal requirements to include the new legislation, but it is obvious that such revision is impossible in regard to the administrative procedure developed under these laws. Report forms, for example, filing systems, and methods of accident analysis change from time to time, more or less independently of legal regulations. The data cited herein, therefore, do not portray conditions precisely as they exist at the present time, though the general situation is described with fair accuracy.

SUMMARY OF FINDINGS

An examination of the motor-vehicle laws for all the 48 States reveals that 19 do not have central control over accident reporting by motor-vehicle operators. Fourteen States require no report from motor-vehicle operators to any State or local agency.

In 17 States the ratio of reported personal-injury accidents to fatal accidents ranges from a low of 5 to 1, to a high of 44 to 1, indicating wide differences in the completeness of reporting.

Thirteen of the thirty-eight States visited do not check their fatal accident reports against the death records of the State health department.

In 10 States accident reports submitted by motor-vehicle operators are open to public inspection.

Great variation exists among the States in defining a reportable accident.

No two of the 38 States visited use the same accident report form or monthly summary form, though there are many important similarities.

Twenty-eight of these thirty-eight States publish a monthly summary of accident statistics.

Various systems of filing and cross-indexing accident reports are employed.

Very few States are making adequate use of their accident reports and data for accident prevention.

LEGAL REQUIREMENTS FOR REPORTING ACCIDENTS

In only 15 of the 48 States does the law require that motor-vehicle operators shall report accidents directly to a central State agency such as the motor-vehicle department, the highway department, or the State police. Eight additional States require reporting to a central agency, except that accidents within incorporated cities and towns are to be reported to the local police who are required to forward the reports, or copies, to the State agency. Five States require reporting to the local police or peace officers, who must forward the reports, or copies, to the State.

One State requires reporting to a central agency, except that accidents occurring in its largest city must be reported to the city police, who need not forward reports to the State. Five States require reporting only to the local police or peace officers, who are not required to forward any reports to the State.

Fourteen States do not require motor-vehicle operators to make any report of accidents.

Only 15 States therefore have complete central control over accident reporting by motor-vehicle operators; 14 States have partial central control; and 19 States have no central control. It is virtually impossible to obtain any perspective of the traffic-accident situation in the States that do not have some degree of central control over accident reporting by motor-vehicle operators.

Figure 1 gives a geographic perspective of the accident reporting requirements in the different States as above outlined; table 1 shows the requirements of individual States in detail.

COMPLETENESS OF ACCIDENT REPORTING

A study of the accident records in 17 States (table 2) reveals that the ratio of reported personal injury accidents to fatalities ranges from 5

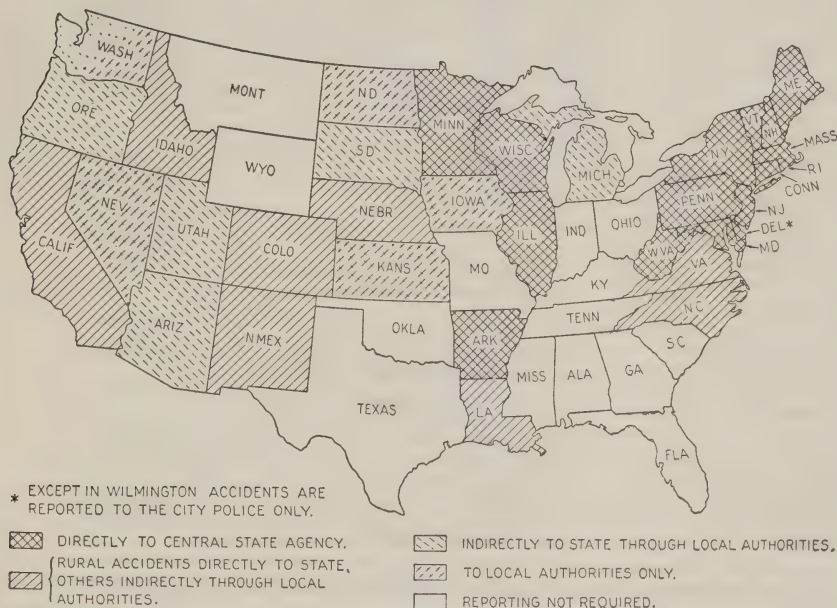


FIGURE 1.—Accident reporting requirements in the several States.

in North Carolina and Minnesota to 44 in Massachusetts, with an average of 15 for the 17 States combined. In 12 States the ratio of reported personal injury and property damage accidents to fatalities ranges from 3 in Idaho to 36 in Connecticut, with an average of 19. The wide variation in ratios reflects wide differences in the completeness with which accidents are reported.

Of the States that require motor-vehicle operators to report accidents directly or indirectly to a central State agency, 15 make accident report form blanks readily available through local police, justices of the peace, motor clubs, insurance companies, hospitals, and other agencies directly concerned with motor-vehicle accidents, and thereby make accident reporting by motor-vehicle operators easier and more convenient (table 3).

TABLE 1.—Basic legal requirements for reporting of accidents by motor-vehicle operators, in 48 States

State	Authority to which report must be made	Time limit
Alabama.....	No report required.....	
Arizona.....	Local ¹	Forthwith.
Arkansas.....	State.....	24 hours.
California.....	do. ²	Do.
Colorado.....	do. ²	Do.
Connecticut.....	do.....	Do.
Delaware.....	do. ³	Do.
Florida.....	No report required.....	
Georgia.....	do.....	
Idaho.....	State ²	24 hours.
Illinois.....	do.....	Do.
Indiana.....	No report required ⁴	
Iowa.....	Local.....	Immediately.
Kansas.....	do.....	Do.
Kentucky.....	No report required.....	
Louisiana.....	State ²	24 hours.
Maine.....	do.....	Immediately.
Maryland.....	do.....	24 hours.
Massachusetts.....	do.....	Forthwith.
Michigan.....	Local ¹	48 hours.
Minnesota.....	State.....	24 hours.
Mississippi.....	No report required.....	
Missouri.....	do.....	
Montana.....	do.....	
Nebraska.....	State ²	24 hours.
Nevada.....	Local.....	As soon as possible.
New Hampshire.....	State.....	Forthwith.
New Jersey.....	do.....	48 hours.
New Mexico.....	do. ²	24 hours.
New York.....	do.....	Forthwith.
North Carolina.....	do. ²	24 hours.
North Dakota.....	Local ⁵	Do.
Ohio.....	No report required.....	
Oklahoma.....	do.....	
Oregon.....	Local ¹	24 hours.
Pennsylvania.....	State.....	Do.
Rhode Island.....	do.....	Forthwith.
South Carolina.....	No report required.....	
South Dakota.....	Local ¹	24 hours.
Tennessee.....	No report required.....	
Texas.....	do. ⁶	
Utah.....	Local ¹	24 hours.
Vermont.....	State.....	Do.
Virginia.....	do. ²	Do.
Washington.....	Local.....	Do.
West Virginia.....	State.....	Immediately.
Wisconsin.....	do. ⁷	48 hours. ⁶
Wyoming.....	No report required.....	

¹ Operators must report to local police, who are required to forward the reports, or copies, to the State department.

² Accidents in incorporated cities or towns are to be reported to local police, who are required to forward the reports, or copies, to the State department.

³ Accidents in the city of Wilmington are to be reported to the Wilmington Department of Public Safety.

⁴ Local police, sheriffs, coroners, and other local officers who in the regular course of their duties receive information on accidents must report to the State department every 30 days, if requested by that department.

⁵ Only accidents occurring in cities or towns must be reported.

⁶ Local police and sheriffs, and hospital authorities must report accidents to the State department within a reasonable time.

⁷ Report must be made to local authorities "as soon as reasonably possible" and to State department within 48 hours.

TABLE 2.—*Ratio of reported accidents to number of deaths, by States*

State	Year	Persons killed	Reported personal injury accidents		Reported personal injury and property damage accidents	
			Number	Per death	Number	Per death
California.....	1936	3,132	36,316	12		
Connecticut.....	1935	439			15,656	36
Delaware.....	1936	61			902	15
Idaho.....	1936	159			512	3
Illinois.....	1936	2,461	15,765	6		
Indiana.....	1936	785	6,440	8	12,434	16
Maine.....	1936	217	1,655	8	5,029	23
Massachusetts.....	1935	921	40,138	44		
Minnesota.....	1936	164	873	5	1,312	8
Missouri.....	1936	926	8,401	9		
New Hampshire.....	1936	103	2,174	21		
New Jersey.....	1935	1,188	18,139	15	30,511	26
New York.....	1936	2,917	78,901	27		
North Carolina.....	1936	1,026	5,200	5	6,639	6
Pennsylvania.....	1936	2,411	35,074	15	55,727	23
Rhode Island.....	1935	89	3,452	39		
Utah.....	1936	184	2,311	13	3,624	20
Virginia.....	1935	839	5,064	6	10,863	13
West Virginia.....	1936	503	7,584	15		
Wyoming.....	1936	117	744	6	1,343	11
Weighted average.....				15		19

At least four States that were visited (Illinois, Oklahoma, Oregon, and Pennsylvania) have taken definite steps to educate the motoring public in the need for reporting and in the procedure in completing report forms. Figures 2 and 3 illustrate work in this direction undertaken in Illinois and Oklahoma. In Oregon and Pennsylvania placards or posters illustrating the way an accident report form should be executed are posted conspicuously in public stations, offices of the justices of the peace, motor clubs, garages, and other places where they may be readily observed by motorists. The Oregon poster is shown in figure 4. An additional three States (Massachusetts, Maryland, and North Carolina) have instituted measures for obtaining more accurate reporting of the exact location of accidents. For example, the North Carolina report form has the following note below the space provided for describing the location of the accident:

"Be exact.—This should preferably read so many yards north, south, east, or west of (size) (type) pipe, box culvert, near end of bridge, underpass, overpass, railroad, intersection, etc.; which pipe, box culvert, bridge, railroad, etc., is so many miles (to the nearest tenth) from (name) county line, city limits, intersection, etc. Be so specific that the location may not be misunderstood."

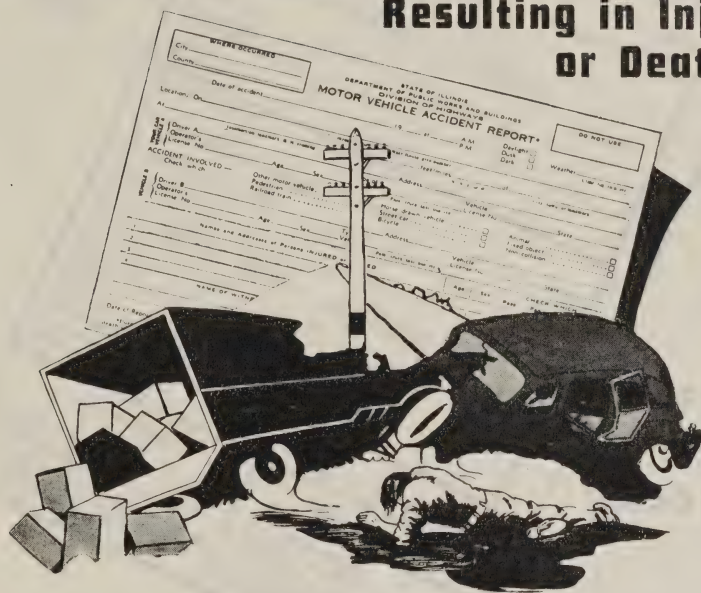
Newspaper clippings of accounts of traffic accidents constitute the largest source of information on unreported accidents. Most of the States that have reasonably good reporting have included this source of information as an essential part of their system. Thus they are able to obtain reports on accidents that otherwise would not be reported. Of the 38 States visited, 23 clip accounts of all motor vehicle accidents; 3 clip accounts of fatal accidents only; and 12 do no clipping (table 3).

General practice in using the various sources of accident data in the 38 States is as follows: 12 States make further inquiry into accidents reported in newspapers; 11 States follow up all delinquent operators when it is known, from any source, that they have been involved in accidents; 8 check against coroners' records; and 3 investigate reports from garages on automobiles that appear to have been involved in serious accidents (table 3). The States that have established these follow-up practices regard them as necessary means for obtaining more and better accident reports. A consistent, conscientious follow-up on all delinquent drivers will, in time, result in a greater tendency of drivers to report voluntarily accidents in which they are involved. Several States with substantial follow-up practices have found that in the beginning such practices required considerable clerical work, but after several months of operation the volume of such work dropped off rapidly.

STATE OF ILLINOIS
HENRY HORNER, Governor
Department of Public Works and Buildings--Division of Highways

DRIVERS! REPORT TRAFFIC ACCIDENTS

Resulting in Injury
or Death—



To
TRAFFIC ENGINEER
DIVISION OF HIGHWAYS
SPRINGFIELD, ILLINOIS

FIGURE 2.—Poster displayed in Illinois to inform public that accident reports must be made.

ACCIDENT REPORTING

ESSENTIAL

TO

ANY

SAFETY

PROGRAM

ACCIDENT REPORTS FORM THE BASIS FOR TRAFFIC PROBLEM REMEDIES

Because it is an established fact that the traffic accident problem cannot be solved by simple observation, a uniform standard system of accident reporting is a necessary adjunct of a safety program. Such a system should provide facts that will, through study, tell the responsible public official what needs to be done.

Above is shown a section of a standard accident report form devised by the National Safety Council and adopted for use in this state. These forms are available without cost to cities, civic organizations, safety councils and schools through the safety division of the State Highway Commission.

FIGURE 3.—Accident reporting poster displayed in public places by the Oklahoma State Highway Commission.

FIGURE 4.—Oregon poster giving instructions for reporting accidents.

The State health department receives a report (death certificate) on every death, whatever the cause, occurring within the State; whereas State agencies that compile accident records seldom receive reports on all fatalities resulting from traffic accidents, especially when there is a lapse of time between the dates of accident and death. Figure 5 gives a fair measure of the time element in fatal accidents, based on experience in Philadelphia, Pa. To insure accuracy 25 of the 38 States visited compare their fatal accident records monthly with those of the health department (table 3). A check between the two records rarely fails to disclose a number of deaths, attributed to motor-vehicle accidents, that have not been included in the records of the State motor-vehicle accident-reporting agency.

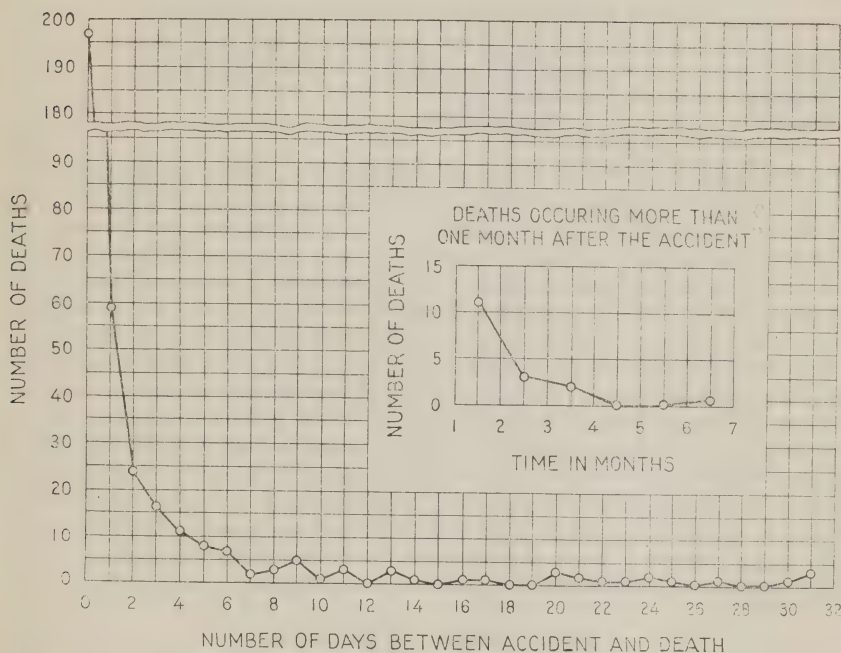


FIGURE 5.—Elapsed time between accident and death based on a study of 374 traffic fatalities in Philadelphia, Pa., 1931.

It is difficult for a State to obtain information on deaths occurring in another State as a direct result of accidents occurring within its borders. Notwithstanding this fact, there is apparently no attempt made to improve this situation. Not one of the States visited transmits information that comes to its attention relating to fatal accidents occurring outside of its jurisdiction, to the States concerned. The check of State accident reports with those of the health department often reveals accidents in which the place of occurrence and the place of death are in different States.

In 24 States accident reports submitted by motor-vehicle operators are held in strict confidence, for use only by the State. In 10 States that require reporting in some manner, the reports are open to public inspection. Keeping reports confidential, State authorities believe, encourages motor-vehicle operators to report accidents, and discourages "ambulance chasing" and unnecessary litigation. In a few

States photostatic copies of the reports can be obtained easily and conveniently, for a nominal fee, and a thriving business is maintained. The following tabulation indicates State practice in making accident reports public.

STATES HOLDING REPORTS IN CONFIDENCE

Arizona	Louisiana	Oregon
Arkansas	Maine	Pennsylvania
California	Massachusetts ¹	Rhode Island
Colorado	Michigan	South Dakota
Delaware	Nebraska	Utah
Idaho	New Jersey	Virginia
Illinois	New Mexico	Washington
Iowa	North Carolina	Wisconsin

STATES OPENING REPORTS TO PUBLIC INSPECTION

Connecticut	Nevada	Vermont
Kansas	New Hampshire	West Virginia
Maryland	New York	
Minnesota	North Dakota	

Several States have found that opening to public inspection accidents reports by police officers results in a heavy demand on the officers for appearance in civil cases. Such a demand can be satisfied only by the neglect of much needed and important highway patrol and accident investigation work. In consequence, at least two States, Massachusetts and New Jersey, have definitely limited their accident investigation and reporting work to fatal and serious injury cases only.

Reports of accidents by motor-vehicle operators are often inaccurate and many are inevitably biased. This situation is partially overcome in States where there is an established State police department or a highway patrol that reports accident occurrence outside of incorporated cities and towns. The official reports, however, while more reliable, are incomplete in number, because of lack of personnel, large territory to be patrolled, and conflicts between such investigations and other duties. As a result reports submitted by motor-vehicle operators are often the only reports available on an accident.

UNIFORMITY OF RECORDS

It is very difficult, if not impossible, to consolidate or compare in detail the motor-vehicle accident data of different States, due to the lack of uniformity in the reporting and summarizing of the data.

There is, first, variation among the States as to the kind of accidents required to be reported. Twenty-six States require the motor-vehicle operator to report accidents involving death, personal injury, or property damage (table 4). Eight States require reports only on accidents involving death or personal injury. Fourteen States require no reporting by operators.

Twenty-two of the twenty-six States that require reports on accidents involving property damage condition the requirement on the amount of damage. Reports are required as follows:

¹ No specific law, but State attorney general holds that the reports are not intended for public inspection, so the records are kept confidential.

	<i>Total damage equal to or more than—</i>
3 States.....	\$10
4 States.....	25
14 States.....	50
1 State.....	100

Three States require a report for damage in any amount and one State when a vehicle is rendered inoperative.

TABLE 4.—*Kinds of motor-vehicle accidents legally reportable, by States*

State	Fatal and personal-injury accidents	Accidents causing property damage only	Minimum property damage reportable
Alabama.....	No.....	No.....	
Arizona.....	Yes.....	Yes.....	\$50.
Arkansas.....	Yes.....	Yes.....	\$50.
California.....	Yes.....	No ¹	
Colorado.....	Yes.....	Yes.....	Any amount.
Connecticut.....	Yes.....	Yes.....	\$25.
Delaware.....	Yes.....	Yes.....	\$50.
Florida.....	No.....	No.....	
Georgia.....	No.....	No.....	
Idaho.....	Yes.....	Yes.....	\$50.
Illinois.....	Yes.....	No.....	
Indiana ²	No.....	No.....	
Iowa.....	Yes.....	Yes.....	\$25.
Kansas.....	Yes.....	No.....	
Kentucky.....	No.....	No.....	
Louisiana.....	Yes.....	Yes.....	\$50.
Maine.....	Yes.....	Yes.....	\$50.
Maryland.....	Yes.....	No.....	
Massachusetts.....	Yes.....	No.....	
Michigan.....	Yes.....	Yes.....	(?).
Minnesota.....	Yes.....	Yes.....	\$50.
Mississippi.....	No.....	No.....	
Missouri.....	No.....	No.....	
Montana.....	No.....	No.....	
Nebraska.....	Yes.....	Yes.....	\$50.
Nevada.....	Yes.....	Yes.....	Any amount.
New Hampshire.....	Yes.....	No.....	
New Jersey.....	Yes.....	Yes.....	\$25.
New Mexico.....	Yes.....	Yes.....	\$50.
New York.....	Yes.....	No ⁴	
North Carolina.....	Yes.....	Yes.....	\$10.
North Dakota.....	Yes.....	Yes.....	\$50.
Ohio.....	No.....	No.....	
Oklahoma.....	No.....	No.....	
Oregon.....	Yes.....	Yes.....	Any amount.
Pennsylvania.....	Yes.....	Yes.....	\$50.
Rhode Island.....	Yes.....	Yes.....	\$100.
South Carolina.....	No.....	No.....	
South Dakota.....	Yes.....	Yes.....	\$50.
Tennessee.....	No.....	No.....	
Texas ²	No.....	No.....	
Utah.....	Yes.....	Yes.....	\$50.
Vermont.....	Yes.....	Yes.....	\$10.
Virginia.....	Yes.....	Yes.....	\$10.
Washington.....	Yes.....	Yes.....	\$25.
West Virginia.....	Yes.....	No.....	
Wisconsin.....	Yes.....	Yes.....	\$50.
Wyoming.....	No.....	No.....	

¹ Any damage to unattended vehicle must be reported to local authorities.

² See footnotes, table 1.

³ Accident is reportable if the vehicle is incapable of being propelled in its usual manner.

⁴ Only if owner of damaged property is not present.

Another phase of accident reporting where uniformity is definitely lacking is in the report form and monthly statistical summary sheet. Variations in the report form range from differences in individual items to complete difference in form aiming at entirely different objectives. There are here reproduced the standard accident reporting form and monthly summary sheet prepared by the National Safety Council and endorsed by the Bureau of Public Roads.

The National Safety Council operator's accident reporting form shown in figures 6 and 7 illustrates a type of form that gives proportionate weight to the driver, car, and road conditions. In contrast is the Utah form that provides very little specific information concerning the cause and circumstances surrounding the accident. The North Carolina form lays greater stress on those factors involving highway conditions, while the Vermont form is devoted chiefly to the driver's fitness and history to the near exclusion of all other factors. The National Safety Council monthly summary sheet is shown in figures 8 and 9.¹

The variations in individual items are numerous. A few examples will make this evident. In 17 States a motor-vehicle operator need not indicate his driving experience when reporting an accident. A total of 14 States call for this item of information (table 5) but summarize the data in 10 different classifications of length of experience, as shown in figure 10.

¹ This form has not yet been revised to agree with the revised report form illustrated in figs. 6 and 7.

This space to be used for title and instructions

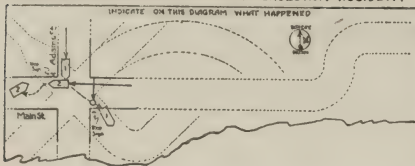
(Tear off on this line before sending in report)

LOCATION OF ACCIDENT		CITY		Accident Occurred in:		DO NOT WRITE IN THIS SPACE	
RURAL	.....miles North	.....miles East	.....miles South	.....miles West	City or Town (state whether limits of or center of)	County	
	Indicate exact mileage or distance, using two mileages and two directions if necessary.				City or Town	County	
	ACCIDENT OCCURRED ON:				Check Class of Highway		
	Street, Highway or Alley Name or Number (if none, so state)				State	U.S.	County
At Intersection With:		Street, Highway or Alley Name or Number (if none, so state)		State	U.S.	County	
Or Not at Intersection	.....feet North	.....feet South	.....feet East	.....feet West	OP: Name (or otherwise identify) nearest power or telephone pole, culvert, intersecting street or highway, house number, curve, bridge, railroad crossing, filling station, alley, driveway, general, milepost, underpass, overpass, or other landmark. Use two directions and two distances if necessary. See diagram for further details.		
Year & Make		Type (Sedan, Taxicab, Truck, Tractor and Kind of Trailer, if any)	Registration Number	Show state of registration	going	North, E., W., etc.	
on		Street name, Highway No., Alley, Driveway, etc.	Parts of Vehicle Damaged	Amount \$			
Driven by:		Name	Street, City and State Address	Phone	Nationality		
Age		Sex	Driving Experience	No. of Passengers	Beginner's License	Operator's	Chaufeur's
Owned by:		Estimated Speed Before Accident	Estimated Speed at Moment of Accident	Lawful Speed	Maximum Safe Speed Under Conditions Prevailing		
Year & Make		Type (Sedan, Taxicab, Truck, Tractor and Kind of Trailer, if any)	Registration Number	Show state of registration	going	North, E., W., etc.	
on		Street name, Highway No., Alley, Driveway, etc.	Parts of Vehicle Damaged	Amount \$			
Driven by:		Name	Street, City and State Address	Phone	Nationality		
Age		Sex	Driving Experience	No. of Passengers	Beginner's License	Operator's	Chaufeur's
Owned by:		Estimated Speed Before Accident	Estimated Speed at Moment of Accident	Lawful Speed	Maximum Safe Speed Under Conditions Prevailing		
ACCIDENT INVOLVED: <input type="checkbox"/> Pedestrian <input type="checkbox"/> Other Motor Vehicle <input type="checkbox"/> Railroad Train <input type="checkbox"/> Electric Car <input type="checkbox"/> Motorcycle <input type="checkbox"/> Horse-drawn Vehicle (check and describe in remarks) <input type="checkbox"/> Other type of Vehicle <input type="checkbox"/> Animal (hidden, herded, unattended) <input type="checkbox"/> Fixed Object <input type="checkbox"/> Non-Collision (ran off roadway, turned over, fell from vehicle)							
WHAT PART OF VEHICLE NO. 1 STRUCK FIXED OBJECT, ETC., OR WHAT PART OF VEHICLE NO. 2 (Check)							
Vehicle No. 1	<input type="checkbox"/> Front	<input type="checkbox"/> Right Front	<input type="checkbox"/> Left Front	<input type="checkbox"/> Right Side	<input type="checkbox"/> Left Side	<input type="checkbox"/> Rear	<input type="checkbox"/> Right Rear
Vehicle No. 2	<input type="checkbox"/> Front	<input type="checkbox"/> Right Front	<input type="checkbox"/> Left Front	<input type="checkbox"/> Right Side	<input type="checkbox"/> Left Side	<input type="checkbox"/> Rear	<input type="checkbox"/> Right Rear
Name		Age	Address				
Nature of Injuries		<input type="checkbox"/> Pedestrian	<input type="checkbox"/> Passenger	Give exact location in the vehicle: In Veh. No. <input type="text"/> Injured <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Killed <input type="checkbox"/>			
Taken to		By					
Name		Age	Address				
Nature of Injuries		<input type="checkbox"/> Pedestrian	<input type="checkbox"/> Passenger	Give exact location in the vehicle: In Veh. No. <input type="text"/> Injured <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Killed <input type="checkbox"/>			
Taken to		By					
Name		Address and Phone	Where was witness: (In Veh. 2, Ped., 150 ft. east, etc.)				
Name		Address and Phone					
PEDESTRIAN: was going		<input type="checkbox"/> ON	<input type="checkbox"/> ACROSS	Street name, Highway No.	From	To	
Check one of following items:		Direction: (North, E., etc.)					
<input type="checkbox"/> 1. Crossing at intersection—without signal <input type="checkbox"/> 2. Crossing at intersection—against signal <input type="checkbox"/> 3. Crossing at intersection—no signal <input type="checkbox"/> 4. Crossing at intersection—diagonally <input type="checkbox"/> 5. Crossing not at intersection—coming from behind parked cars <input type="checkbox"/> 6. Crossing not at intersection—not coming from behind parked cars <input type="checkbox"/> 7. Coming from behind parked cars to enter vehicle <input type="checkbox"/> 8. Getting on or off other vehicle <input type="checkbox"/> 9. Waiting for or getting on or off street car at safety zone <input type="checkbox"/> 10. Same—not at safety zone <input type="checkbox"/> 11. Playing in roadway <input type="checkbox"/> 12. Working in roadway <input type="checkbox"/> 13. Working in roadway—if so, check two <input type="checkbox"/> a. With traffic <input type="checkbox"/> b. Against traffic <input type="checkbox"/> c. Sidewalk available <input type="checkbox"/> d. No sidewalks available <input type="checkbox"/> 14. Hitting on vehicle <input type="checkbox"/> 15. Not in roadway (explain under remarks)		WHAT DRIVERS WERE DOING Vehicle 1 2 3 (Check one—intent of each driver) <input type="checkbox"/> 1. Making right turn <input type="checkbox"/> 2. Making left turn <input type="checkbox"/> 3. Making U turn <input type="checkbox"/> 4. Going straight ahead <input type="checkbox"/> 5. Slowing down or stopping <input type="checkbox"/> 6. Overtaking <input type="checkbox"/> 7. Forward from parking space <input type="checkbox"/> 8. Backward from parking space <input type="checkbox"/> 9. Other backing <input type="checkbox"/> 10. Stopped in traffic lane <input type="checkbox"/> 11. Parked <input type="checkbox"/> 12. Check If Applicable <input type="checkbox"/> 13. Skidding <input type="checkbox"/> 14. Tire blow out <input type="checkbox"/> 15. Avoiding vehicle, object or pedestrian <input type="checkbox"/> 16. Emerging from alley or driveway		Vehicle or Pedestrian Ped. 1 2 3 <input type="checkbox"/> 1. Exceeding speed limit <input type="checkbox"/> 2. Did not have right of way <input type="checkbox"/> 3. On wrong side of road <input type="checkbox"/> 4. Drove through safety zone <input type="checkbox"/> 5. Passing standing street car <input type="checkbox"/> 6. Passing on hill <input type="checkbox"/> 7. Passing on curve <input type="checkbox"/> 8. Other improper passing <input type="checkbox"/> 9. Failure to signal or improper signal <input type="checkbox"/> 10. Improper turn—wide right turn <input type="checkbox"/> 11. Same—cut corner on left turn <input type="checkbox"/> 12. Same—turned from wrong lane <input type="checkbox"/> 13. Other improper turning (explain) <input type="checkbox"/> 14. Casting—car out of gear, down grade <input type="checkbox"/> 15. Disregarded STOP sign <input type="checkbox"/> 16. Disregarded WARNING sign <input type="checkbox"/> 17. Disregarded signal (automatic) <input type="checkbox"/> 18. Disregarded police officer		Violations Indicated (check one or more for each vehicle) Ped. 1 2 3 <input type="checkbox"/> 19. Improper starting from parked position <input type="checkbox"/> 20. Other improper action (explain below) <input type="checkbox"/> 21. No improper driving indicated Explain other violations of pedestrian or driver:	

Show additional vehicles or injured persons together, with as many more witnesses as possible in remarks or on another form.

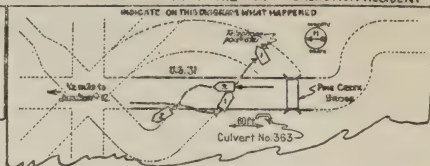
FIGURE 6.—First page of accident report form recommended by National Safety Council.

EXAMPLE OF DIAGRAM FOR A TYPICAL INTERSECTION ACCIDENT



Vehicle No. 1 was going south on Adams Street and failed to stop at STOP sign before entering intersection with Main St. Vehicle No. 2 was going west on Main St. Vehicle No. 1 struck the right rear side of Vehicle No. 2 and then went over the curb at the Southeast corner after striking a pedestrian who was crossing to the Southeast corner from the Northeast corner.

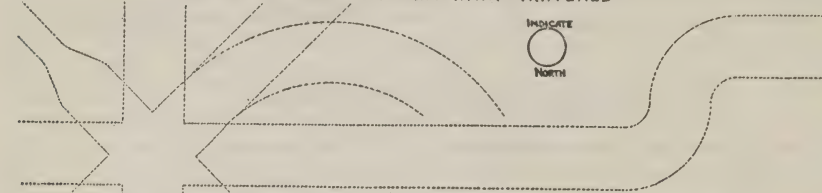
EXAMPLE OF DIAGRAM FOR A TYPICAL NON-INTERSECTION ACCIDENT



Vehicle No. 1 was going south on U. S. Highway No. 31, about 1/2 mile south of the junction with State Highway No. 12. The right front wheel slipped off edge of pavement. In getting back on the pavement the driver turned too sharply, and allowed his car to go to the wrong side of the road where it struck the left rear side of Vehicle No. 2 which was going North on U. S. Highway No. 31. Vehicle No. 2 stopped on west shoulder of road, and Vehicle No. 1 went into ditch on east side, hitting a telephone pole.

(Tear off on this line before sending in report.)

INDICATE ON THIS DIAGRAM WHAT HAPPENED



INSTRUCTIONS

- (1) Use dashed lines as guides to draw heavy lines which will show outline of roadway at place of accident. (2) Use solid line to show path of vehicle before accident; dotted line after accident. (3) Number each vehicle and show direction of travel by arrow. (4) Show pedestrians by (5) Railroad by (6) Indicate distance from point of collision or point of leaving the pavement or traveled way to nearest identifying landmarks. (7) Show topographic features such as bridges, culverts, telephone poles and road signs with identifying numbers or names. (8) Show where vehicles were in roadway when accident occurred and where they finally came to rest.

1 2 3 Ped. (Check where applicable)

- ☐ 1. Had not been drinking
☐ 2. Had been drinking
☐ 3. a. Obviously drunk
☐ b. Driving ability impaired
☐ c. Driving ability not impaired
☐ d. Not known whether impaired

1 2 3 Ped. (Check one)

- ☐ 1. Had physical defect (eyesight, etc.)
☐ 2. Other handicaps
☐ 3. Sleepy, fatigued, etc.
☐ 4. Apparently asleep
☐ 5. Apparently normal

CONDITION OF DRIVER AND PEDESTRIAN

Explain condition and show TYPE, RESULTS, and WHO gave alcohol tests:

TRAFFIC CONTROL

- (Check one)
1. Railroad Crossing Gates
2. Officer or Watchman
3. Automatic signal
4. Stop sign
5. Warning sign
6. No control present

WEATHER

(Check one)

- ☐ 1. Clear
☐ 2. Cloudy
☐ 3. Raining
☐ 4. Snowing
☐ 5. Fog or mist
☐ 6. Dust or smoke

LIGHT

(Check one)

- ☐ 1. Daylight
☐ 2. Dark
☐ 3. Darkness
☐ 4. Artificial lights
☐ 5. No artificial lights

CONDITION OF VEHICLE

1 2 3 (Check one)

- ☐ 1. Defective brakes
☐ 2. Improper lights
☐ 3. Defective steering gear
☐ 4. Other defects
☐ 5. No defects

Explain fully in remarks

VISION OBSCURED BY:

- 1 2 3 (Check where applicable)
☐ 1. Rain, snow, etc. on windshield
☐ 2. Cracked windshield
☐ 3. Dirty windshield, windows
☐ 4. Windshield or windows not glass
☐ 5. Building
☐ 6. Trees, crops, etc.
☐ 7. Embankment
☐ 8. Signboards, etc.

KIND OF LOCALITY

- Check one, indicating that 50% or more of the area alongside the street or road for 300 feet near the accident was:
☐ 1. Industrial district
☐ 2. Business district
☐ 3. Residential district
☐ 4. School district
☐ 5. Open or other Describe in remarks

Roadway Character

(Check two)

- ☐ 1. Straight road
☐ 2. Slight curve
☐ 3. Sharp curve
☐ 4. Winding road
☐ 1. Level road
☐ 2. Hill crest
☐ 3. Up grade
☐ 4. Down grade

TYPE AND CONDITION OF SURFACE

(Check one)

- ☐ 1. Concrete
☐ 2. Brick
☐ 3. Asphalt
☐ 4. Wood block
☐ 5. Oil
☐ 6. Gravel
☐ 7. Dirt
☐ 8. Other

TYPE AND CONDITION OF SURFACE

(Check two)

- ☐ 1. Dry
☐ 2. Wet
☐ 3. Muddy
☐ 4. Snowy
☐ 5. Ice
☐ 1. Loose material on surface, Describe.
☐ 2. Holes, deep ruts, ditches, other. Explain.
☐ 3. No defects

ROAD WIDTH AND LANES

1. What was street or highway width (the distance between property or right of way lines) _____ ft.
2. What was roadway width (the width of road surface for vehicular traffic)? _____ ft.
3. Total number of traffic lanes _____ Were lanes marked? ☐ Yes ☐ No If so, by what? Describe.
4. Were opposing traffic lanes divided? ☐ Yes ☐ No If so, by what? Describe.
Was road under construction or repair? ☐ Yes ☐ No

DESCRIBE ACCIDENT. Also use this space for data on third vehicle, additional witnesses or injured persons and explanation of questions not fully answered by checking in boxes provided.

REMARKS

★ SIGNATURE

Name of person submitting report

Street, City and State Address

Date of Report

Operator ☐

Occupant ☐

Witness ☐

FOR OFFICIAL INVESTIGATOR ONLY

Show arrests, charges and disposition of case/s.

What were the principal and contributing causes

Did you witness the accident?

Were photographs taken?

Other Information

Was investigation made at scene of accident?

Where else was investigation made?

Time of Investigation

A.M. P.M. Date

★ SIGNATURE

Investigator's Name

Title

Department

Address

Date of Report

FIGURE 7.—Second page of accident report form recommended by National Safety Council.

[A monthly report on this form (or its equivalent) is required from every city in the National Traffic Safety Contest. Table A must be completely filled out; Table B is optional. For complete instructions see Public Safety Memo No. 69. Three copies of the report should be made, one for local, police department files, one for the local safety council or committee, and one for the National Safety Council, Inc., 20 N. Wacker Drive, Chicago.]



TRAFFIC ACCIDENT SUMMARY

Name of City _____

Month _____

Year _____

TABLE A—TYPE OF ACCIDENT AND AGE GROUP

Type of Accident	Number of Accidents				Number of Persons Killed						Number of Persons Injured					
	Total (A)	Fatal (B)	Non-Fatal (C)	Prop'ty Damage (D)	All ages (E)	0-4 (F)	5-14 (G)	15-24 (H)	25-64 (I)	65 & over (J)	All ages (K)	0-4 (L)	5-14 (M)	15-24 (N)	25-64 (O)	65 & over (P)
1. TOTAL TRAFFIC																
2. MOTOR VEHICLE—Total																
3. Collision with pedestrian																
4. ...with other motor vehicle																
5. ...with railroad train																
6. ...with electric car																
7. ...with bicycle																
8. ...with horse-drawn vehicle																
9. ...with fixed object																
10. Non-collision																
11. OTHER TRAFFIC—Total																
12. R.R.—not with mot. veh.																
13. Elec. car—not with m. v.																
14. Other veh.—not with m. v.																

TABLE B—CIRCUMSTANCES ATTENDING OCCURRENCE OF MOTOR VEHICLE ACCIDENTS

Circumstances	Total	Fatal	Non-Fatal	Prop'ty Damage Only	Circumstances	Total	Fatal	Non-Fatal	Prop'ty Damage Only
I. TIME					III. TYPE OF MOTOR VEHICLE				
Total accidents					Total motor vehicles				
1. 12.01 a.m. to 6.00 a.m.					1. Passenger car				
2. 6.01 a.m. to 7.00 a.m.					2. Truck				
3. 7.01 a.m. to 8.00 a.m.					3. Taxicab				
4. 8.01 a.m. to 9.00 a.m.					4. Bus				
5. 9.01 a.m. to 10.00 a.m.					5. Motorcycle				
6. 10.01 a.m. to 11.00 a.m.					6. Not stated				
7. 11.01 a.m. to 12.00 noon					IV. RESIDENCE OF DRIVER				
8. 12.01 p.m. to 1.00 p.m.					Total drivers				
9. 1.01 p.m. to 2.00 p.m.					1. Resident of city				
10. 2.01 p.m. to 3.00 p.m.					2. Res. within metropolitan district				
11. 3.01 p.m. to 4.00 p.m.					3. Resident elsewhere in same state				
12. 4.01 p.m. to 5.00 p.m.					4. Resident of some other state				
13. 5.01 p.m. to 6.00 p.m.					5. Not stated				
14. 6.01 p.m. to 7.00 p.m.					V. AGE OF DRIVER				
15. 7.01 p.m. to 8.00 p.m.					Total drivers				
16. 8.01 p.m. to 9.00 p.m.					1. Under 20				
17. 9.01 p.m. to 10.00 p.m.					2. 20-29				
18. 10.01 p.m. to 11.00 p.m.					3. 30-39				
19. 11.01 p.m. to 12.00 midnight					4. 50-64				
20. Not stated					5. 65 and over				
VI. SEX OF DRIVER					6. Not stated				
Total accidents					Total drivers				
1. At intersection					1. Male				
2. Not at intersection					2. Female				
3. Not stated					3. Not stated				

FIGURE 8.—First page of monthly report form recommended by National Safety Council.

TABLE B—(Continued)

Circumstances	Total	Fatal	N. F.	P. D.	Circumstances	Total	Fatal	N. F.	P. D.
VII. MANNER OF COLLISION					XII. CONDITION OF VEHICLE				
Total 2-vehicle accidents.....					Total motor vehicles.....				
1. Angle collisions.....					1. Defective brakes.....				
2. Head-on collisions.....					2. Improper lights.....				
3. Rear-end collisions.....					3. Defective steering mechanism.....				
4. Backed into other vehicle.....					4. Other defects.....				
5. Side-swiped other vehicle.....					5. No defects.....				
6. Not stated.....					6. Not stated.....				
VIII. WHAT DRIVERS WERE DOING					XIII. TRAFFIC CONTROL FUNCTIONING				
Total motor vehicles.....					Total accidents.....				
1. Making right turn.....					1. Railroad crossing gates.....				
2. Making left turn.....					2. Officer or watchman.....				
3. Making U turn.....					3. Automatic signal.....				
4. Going straight ahead.....					4. STOP signs.....				
5. Slowing down or stopping.....					5. Warning signs: SLOW, etc.....				
6. Overtaking.....					6. No control functioning.....				
7. Leaving curb (including backing).....					7. Not stated.....				
8. Other backing.....					XIV. CONDITION OF DRIVER				
9. Stopped in traffic.....					Total drivers.....				
10. Parked.....					1. Under influence of liquor.....				
11. Not stated.....					2. Physical defect (eyesight, etc.).....				
IX. MISCELLANEOUS EVENTS					3. Other defect.....				
Total (of following 3 items).....					4. No defect.....				
1. Skidding.....					5. Not stated.....				
2. Blow-out.....					XV. CONDITION OF PEDESTRIAN				
3. Ran off roadway.....					Total pedestrians.....				
X. WHAT PEDESTRIANS WERE DOING					1. Under influence of liquor.....				
Total pedestrians.....					2. Physical defect (eyesight, etc.).....				
1. Crossing at intersection with signal.....					3. Other defect.....				
2. Same—against signal.....					4. No defect.....				
3. Same—no signal.....					5. Not stated.....				
4. Same—diagonally.....					XVI. ROAD CONDITION				
5. Crossing—not at intersection.....					Total accidents.....				
6. Hitching on vehicle.....					1. Road under repair.....				
7. Playing in roadway.....					2. Obstruction not lighted.....				
8. Walking in roadway.....					3. Other defect.....				
9. Working in roadway.....					4. No defect.....				
10. Waiting for or getting on or off street car—at safety zone.....					5. Not stated.....				
11. Same—no safety zone.....					XVII. ROAD SURFACE				
12. Getting on or off other vehicle.....					Total accidents.....				
13. Not in roadway.....					1. Dry.....				
14. Not stated.....					2. Wet, snowy, icy, etc.....				
XI. IMPROPER DRIVING					3. Not stated.....				
Total drivers.....					XVIII. WEATHER				
1. Exceeding speed limit.....					Total accidents.....				
2. Did not have right of way.....					1. Clear.....				
3. Cutting in.....					2. Cloudy, fog, raining, snowing, etc.....				
4. On wrong side of road.....					3. Not stated.....				
5. Passing standing street car.....					XIX. LIGHT				
6. Drove through safety zone.....					Total accidents.....				
7. Passing on curve or hill.....					1. Daylight.....				
8. Failed to signal.....					2. Dusk or semi-darkness.....				
9. Improper turn—wide right turn.....					3. Darkness—street lights.....				
10. Same—cut corner on left turn.....					4. Darkness—no street lights.....				
11. Same—turn from wrong lane.....					5. Not stated.....				
12. Disregarded stop sign.....					This Report Prepared by				
13. Disregarded signal.....					Name and address to which correspondence should be addressed.....				
14. Other improper driving.....									
15. No improper driving.....									
16. Not stated.....									

FIGURE 9.—Second page of monthly report form recommended by National Safety Council.

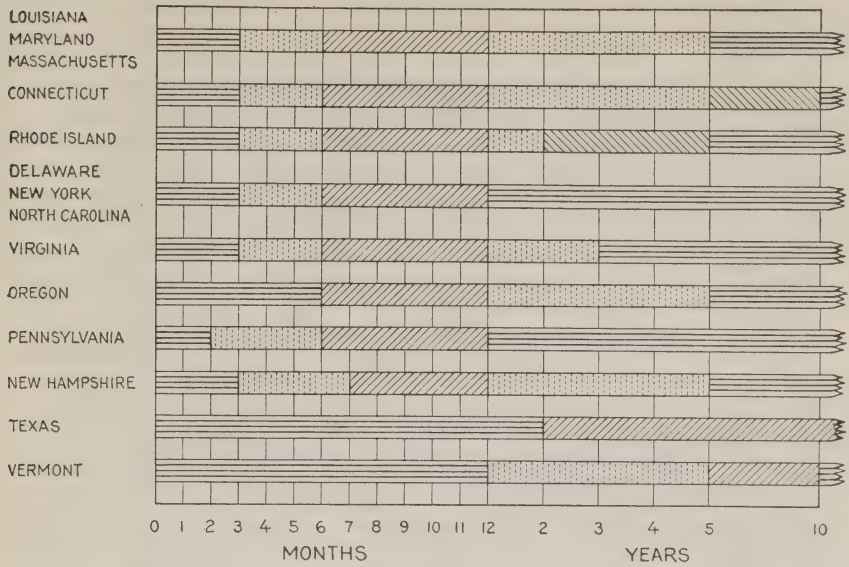


FIGURE 10.—Graphic comparison of statistical groupings used by 14 States in classifying length of driving experience (each division of a bar represents a statistical group).

TABLE 5.—Uniformity of accident reporting and statistics in 38 States

State	Causes and circumstances summarized for—					Age groups summarized ¹		Length of driving experience summarized ¹	Report form calls for—	
	All accidents	Fatal accidents	Personal injury accidents	Property damage accidents	“Nonfatal” accidents	Killed and injured	Drivers involved		Approximate speed	Nature of injuries
Alabama ²	Yes	Yes	Yes	Yes	Yes	Yes, 1 Yes, 2	Yes, 1 Yes, 2	Yes, 1 Yes, 2		
Arizona	Yes	Yes	Yes	Yes	Yes	Yes, 3	Yes, 3	Yes, 3		
California	Yes	Yes	Yes	Yes	Yes	Yes, 1	Yes, 1	Yes, 1		
Colorado	Yes	Yes	Yes	Yes	Yes	Yes, 4	Yes, 4	Yes, 4		
Connecticut	Yes	Yes	Yes	Yes	Yes	Yes, 5	Yes, 5	Yes, 5		
Delaware	Yes	Yes	Yes	Yes	Yes	Yes, 1	Yes, 1	Yes, 1		
Georgia ²	Yes	Yes	Yes	Yes	Yes	Yes, 6	Yes, 6	Yes, 6		
Idaho	Yes	Yes	Yes	Yes	Yes	Yes, 7	Yes, 7	Yes, 7		
Illinois	Yes	Yes	Yes	Yes	Yes	Yes, 8	Yes, 8	Yes, 8		
Indiana	Yes	Yes	Yes	Yes	Yes	Yes, 9	Yes, 9	Yes, 9		
Iowa	Yes	Yes	Yes	Yes	Yes	Yes, 10	Yes, 10	Yes, 10		
Kansas ²	Yes	Yes	Yes	Yes	Yes	Yes, 11	Yes, 11	Yes, 11		
Louisiana	Yes	Yes	Yes	Yes	Yes	Yes, 12	Yes, 12	Yes, 12		
Maine	Yes	Yes	Yes	Yes	Yes	Yes, 13	Yes, 13	Yes, 13		
Maryland	Yes	Yes	Yes	Yes	Yes	Yes, 14	Yes, 14	Yes, 14		
Massachusetts	Yes	Yes	Yes	Yes	Yes	Yes, 15	Yes, 15	Yes, 15		
Michigan	Yes	Yes	Yes	Yes	Yes	Yes, 16	Yes, 16	Yes, 16		
Minnesota	Yes	Yes	Yes	Yes	Yes	Yes, 17	Yes, 17	Yes, 17		
Missouri	Yes	Yes	Yes	Yes	Yes	Yes, 18	Yes, 18	Yes, 18		
Nebraska	Yes	Yes	Yes	Yes	Yes	Yes, 19	Yes, 19	Yes, 19		
New Hampshire	Yes	Yes	Yes	Yes	Yes	Yes, 20	Yes, 20	Yes, 20		
New Jersey	Yes	Yes	Yes	Yes	Yes	Yes, 21	Yes, 21	Yes, 21		
New Mexico	Yes	Yes	Yes	Yes	Yes	Yes, 22	Yes, 22	Yes, 22		
New York	Yes	Yes	Yes	Yes	Yes	Yes, 23	Yes, 23	Yes, 23		
North Carolina	Yes	Yes	Yes	Yes	Yes	Yes, 24	Yes, 24	Yes, 24		
Ohio	Yes	Yes	Yes	Yes	Yes	Yes, 25	Yes, 25	Yes, 25		
Oklahoma	Yes	Yes	Yes	Yes	Yes	Yes, 26	Yes, 26	Yes, 26		
Oregon	Yes	Yes	Yes	Yes	Yes	Yes, 27	Yes, 27	Yes, 27		
Pennsylvania	Yes	Yes	Yes	Yes	Yes	Yes, 28	Yes, 28	Yes, 28		
Rhode Island	Yes	Yes	Yes	Yes	Yes	Yes, 29	Yes, 29	Yes, 29		
Texas	Yes	Yes	Yes	Yes	Yes	Yes, 30	Yes, 30	Yes, 30		
Utah	Yes	Yes	Yes	Yes	Yes	Yes, 31	Yes, 31	Yes, 31		
Vermont	Yes	Yes	Yes	Yes	Yes	Yes, 32	Yes, 32	Yes, 32		
Virginia	Yes	Yes	Yes	Yes	Yes	Yes, 33	Yes, 33	Yes, 33		
Washington ²	Yes	Yes	Yes	Yes	Yes	Yes, 34	Yes, 34	Yes, 34		
West Virginia	Yes	Yes	Yes	Yes	Yes	Yes, 35	Yes, 35	Yes, 35		
Wisconsin	Yes	Yes	Yes	Yes	Yes	Yes, 36	Yes, 36	Yes, 36		
Wyoming	Yes	Yes	Yes	Yes	Yes	Yes, 37	Yes, 37	Yes, 37		

¹ In each column, like numbers indicate identical statistical groupings or classifications. See figs. 10, 11, and 12.² No summaries published.

In four States the approximate speed of the vehicles is reported. Only five States (see table 5) require data as to the nature of personal injuries.

In the matter of ages of the persons injured and killed, a study of the summary forms from 38 States shows that 11 different age groupings are used. The age groupings and the States using them are shown in figure 11. It is obviously impossible to combine the statistics from all of these States in any one arrangement of age groups although strictly comparable tabulations are made by 19 States and certain individual groups can be compared for additional States. Twelve States do not tabulate by age groups.

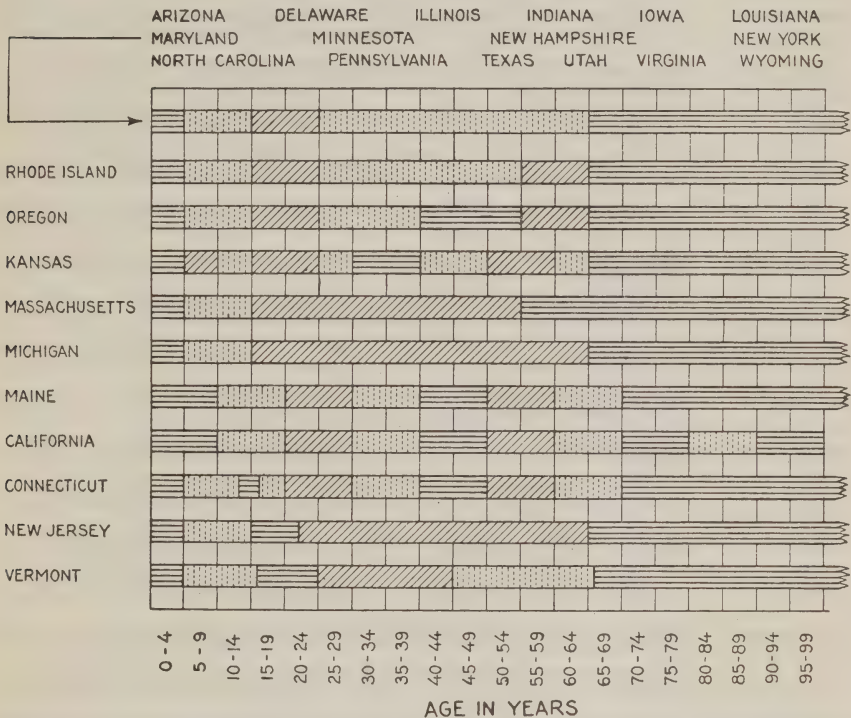


FIGURE 11.—Graphic comparison of statistical age groupings of accident victims, used by 26 States (each division of a bar represents a statistical group).

There are 17 different age groupings used for the age of the driver, shown in figure 12, while 9 States do not ask the driver's age.

In 13 States the causes and circumstances are tabulated separately for fatal accidents, personal-injury accidents, and those involving property damage only. Fatal and nonfatal accidents are separated in nine States. Total accidents only are tabulated in six States and fatal accidents only in two States (table 5). Without knowledge of the States' requirements for reporting, it is impossible for anyone reading the statistical summaries to know whether or not "nonfatal" includes property-damage accidents.

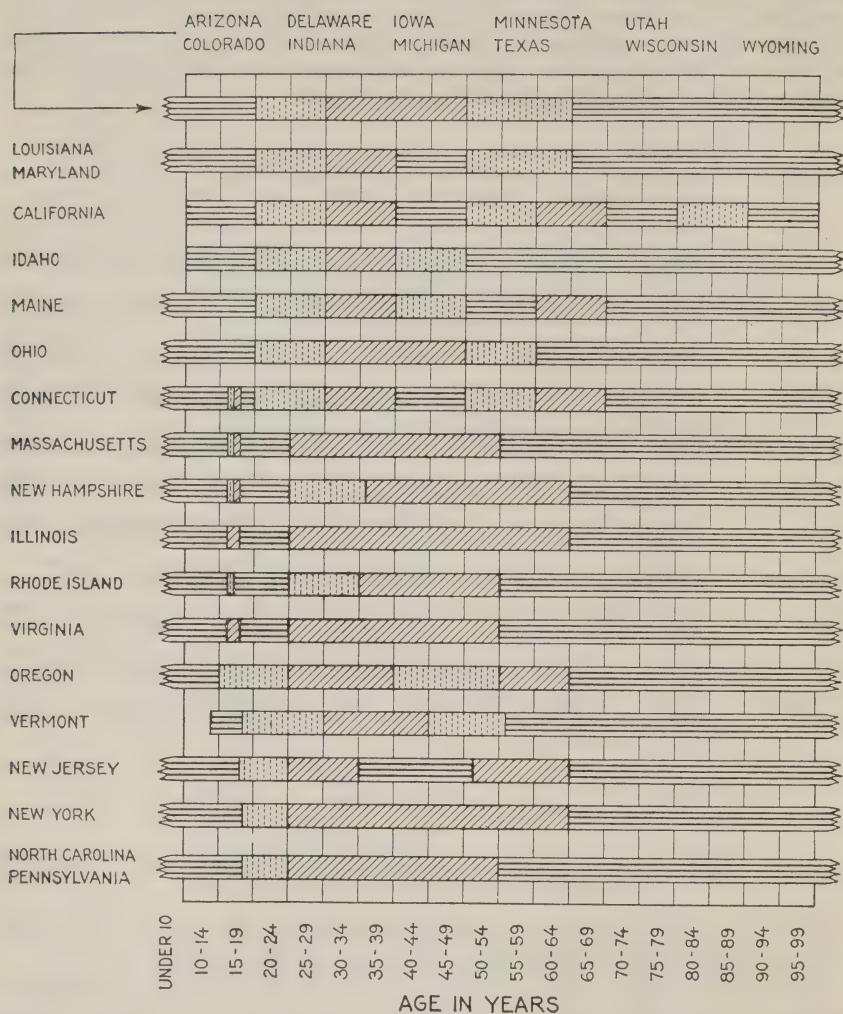


FIGURE 12.—Graphic comparison of statistical age groupings of drivers involved in accidents, used by 29 States (each division of a bar represents a statistical group).

ACCIDENT ANALYSIS

Tabulation, analysis, and publication of motor-vehicle-accident facts are authorized or required by law in 16 States. However, a number of other States engage in this activity without legal prompting as the need has become manifest. Twenty-six of the thirty-eight States visited tabulate and publish monthly statistics on all reported motor-vehicle accidents, and two States report on fatal accidents only (table 6). Three States publish annual summaries only. Seven States publish no statistics on accidents. Comprehensive annual reports on accident statistics are prepared by only 9 of the 38 States visited. The State of Connecticut maintains a daily and weekly service on certain accident statistics. The daily traffic-accident report for Connecticut is illustrated in figure 13. Compilation and publication of current facts on the causes and circumstances of accidents are essential to education in traffic safety, and to the engineering and enforcement agencies working to solve the traffic-accident problem.

Two methods of summarizing accident data are used, the hand tally and the machine tabulation. The hand-tally method is simpler and perhaps cheaper for use in straight, simple summarizing of data from relatively small numbers of accident reports. The mechanical-tabulation method is more complex, but lends itself to efficient use in quickly and accurately summarizing large quantities of data. The mechanical method also makes possible numerous detailed analyses and correlations of accident facts, that would not be feasible by the hand-tally method. Twenty-two of the thirty-eight States visited use the hand-tally method. Eleven use the machine-tabulation method. The remaining five States make no statistical summaries (table 6). It is noteworthy that the States using mechanical tabulation have been content with simple monthly summaries such as the other States have made by hand tallying. Very few have taken advantage of the machine to make detailed analyses of accident causes and circumstances, and these only to a limited extent.

Daily Traffic Accident Report

STATE DEPARTMENT OF MOTOR VEHICLES

AS OF Tuesday, January 26th

1936

1937

<u>1,123</u>	*All Traffic Accidents	<u>940</u>
<u>29</u>	*Fatalities	<u>28</u>
<u>719</u>	*Injuries	<u>569</u>
<u>15</u>	Adult Pedestrians Killed	<u>17</u>
<u>1</u>	Child Pedestrians Killed	<u>1</u>
<u>12</u>	Adult Occupants Killed	<u>8</u>
<u>-</u>	Child Occupants Killed	<u>1</u>
<u>-</u>	Adult Bicyclists Killed	<u>1</u>
<u>1</u>	Child Bicyclists Killed	<u>-</u>
* * *		
<u>148</u>	Adult Pedestrians Injured	<u>124</u>
<u>67</u>	Child Pedestrians Injured	<u>36</u>
<u>4</u>	Age Not Given At This Time	<u>15</u>
<u>467</u>	Adult Occupants Injured	<u>326</u>
<u>19</u>	Child Occupants Injured	<u>16</u>
<u>3</u>	Age Not Given At This Time	<u>37</u>
<u>4</u>	Adult Bicyclists Injured	<u>4</u>
<u>7</u>	Child Bicyclists Injured	<u>11</u>

*1937 Totals subject to later correction owing to incomplete reports because of injured persons not definitely "recoveries" at this time.

FIGURE 13.—Daily traffic accident report of Connecticut.

TABLE 6.—*Tabulation and uses of accident data, in 38 States*

State	Method of tabulation		Tabulations published		Uses made of accident data					Driver discipline	Enforcement studies
	Hand tally	Mechanical tabulation	Monthly summaries	Special annual reports	Monthly statistical summary	Special summaries or statistical studies	Accident spot maps	Special location studies			
Alabama.....	Yes		Yes	Yes	Yes		Yes				
Arizona.....			Yes	Yes	Yes		Yes			Yes	
California.....	Yes		Yes		Yes		Yes				
Colorado.....			Yes		Yes		Yes				
Connecticut.....	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes	
Delaware.....	Yes		Yes		Yes		Yes				
Georgia.....											
Idaho.....	Yes		(1)		(1)						
Illinois.....	Yes		Yes		Yes		Yes				
Indiana.....	Yes		Yes	Yes	Yes		Yes				Yes
Iowa.....	Yes		Yes		Yes		Yes				
Kansas.....											
Louisiana.....	Yes		Yes 1		Yes 1						
Maine.....	Yes			Yes			Yes				
Maryland.....	Yes		Yes 1		Yes 1		Yes				
Massachusetts.....		Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Michigan.....	Yes		Yes		Yes						
Minnesota.....	Yes		Yes		Yes				Yes		
Missouri.....	Yes		Yes		Yes		Yes			Yes	
Missouri.....	Yes		Yes		Yes						
Nebraska.....	Yes		Yes		Yes		Yes				
New Hampshire.....											
New Jersey.....	Yes		Yes		Yes	Yes	Yes				
New Mexico.....								Yes			
New York.....	Yes	Yes	Yes		Yes				Yes		
North Carolina.....	Yes		Yes	Yes	Yes						
Ohio.....	Yes		Yes	Yes	Yes						
Oklahoma.....	Yes		Yes	Yes	Yes	Yes		Yes			
Oregon.....											
Pennsylvania.....	Yes	Yes	Yes	Yes	Yes						
Rhode Island.....	Yes	Yes	Yes		Yes						Yes
Texas.....	Yes	Yes	Yes	Yes	Yes		Yes			Yes	
Texas.....	Yes	Yes	Yes		Yes						
Utah.....	Yes		(1)		(1)						
Vermont.....	Yes		(1)		(1)						Yes
Virginia.....	Yes		Yes	Yes	Yes		Yes				
Washington.....											
West Virginia.....	Yes		Yes		Yes		Yes				
Wisconsin.....		Yes	Yes		Yes						Yes
Wyoming.....	Yes		Yes		Yes		Yes				

1 Annual summaries only.

2 Fatal accidents only.

The States with the best accident-reporting systems file and cross-index reports in such manner as to serve a maximum of uses—for location studies, for disciplining the driver, for enforcement on the road, and for statistical analyses of data. However, there is considerable variation among the 38 States visited in the methods used for filing the original accident reports and cross-indexing as shown in table 7. Ten States file the original reports by serial number, 7 by date, 12 by location, 8 by name of person reporting, and 1 files in no special manner. Twenty States cross-index by names of persons involved, of which four also cross-index by location and one by date. One cross-indexes by date and location, and one by location. Sixteen States do not cross-index their accident reports.

TABLE 7.—*Accident-report filing in 38 States*

State	Original report filed by—				Reports cross-indexed by—			Special file and record on fatal accidents
	Serial number	Date	Location	Name of person reporting	Date	Location	Names of persons involved	
Alabama.....				Yes			Yes	
Arizona.....			Yes				Yes	Yes.
California.....			Yes				Yes	Yes.
Colorado.....			Yes				Yes	
Connecticut.....	Yes					Yes	Yes	Yes.
Delaware.....		Yes				Yes		Yes.
Georgia ¹								
Idaho.....		Yes						
Illinois.....			Yes					
Indiana.....	Yes						Yes	Yes.
Iowa.....				Yes				Yes.
Kansas.....				Yes			Yes	Yes.
Louisiana.....		Yes						
Maine.....	Yes						Yes	Yes.
Maryland.....	Yes						Yes	Yes.
Massachusetts.....				Yes	Yes	Yes		Yes.
Michigan.....	Yes				Yes		Yes	Yes.
Minnesota.....	Yes							Yes.
Missouri.....	Yes							Yes.
Nebraska.....	Yes							
New Hampshire.....			Yes				Yes	Yes.
New Jersey.....				Yes		Yes	Yes	Yes.
New Mexico.....			Yes					
New York.....				Yes		Yes	Yes	Yes.
North Carolina.....		Yes						Yes.
Ohio.....			Yes					
Oklahoma.....			Yes				Yes	Yes.
Oregon.....			Yes				Yes	
Pennsylvania.....	Yes						Yes	Yes.
Rhode Island.....				Yes		Yes	Yes	Yes.
Texas.....			Yes				Yes	Yes.
Utah.....		Yes						
Vermont.....	Yes						Yes	Yes.
Virginia.....			Yes				Yes	Yes.
Washington.....				Yes				
West Virginia.....		Yes						
Wisconsin.....			Yes					Yes.
Wyoming.....		Yes						Yes.

¹ No filing system.

Because of the great public interest in fatal accidents, every State experiences a large demand for fatal-accident data and for information concerning specific cases. For these reasons 24 of the 38 States visited lay much emphasis on fatal accident records (table 7). Most of these States maintain ledgers or card files, cross-indexed by such pertinent references as name of persons killed, date of accident, date of death, location of accident, and place of death. Usually the original reports on fatal accidents are kept separate from the other accident reports.

The ultimate purpose of accident reports and facts is their use in the generally recognized phases of accident-prevention work. How generally the States are adhering to this purpose can be gathered from the following tabulation showing specific uses to which accident reports and information are applied in the 38 States visited.

Uses	Number of States	
	Yes	No
Special statistical summaries.....	6	32
Accident spot maps.....	24	14
Special location studies.....	4	34
Driver discipline.....	7	31
Enforcement studies.....	3	35

Studies of accidents by location offer a wide and fertile field for effective accident prevention work. As shown in table 6, only 4 of the 38 States visited have done much in this field. Most of the States, 24 in number, limit their efforts to keeping an accident spot map, while several States are doing nothing at all.

Drivers with high accident experience are easily recognized in States that maintain an active card file on drivers involved in accidents. A sound plan of operation automatically cites the accident repeater for a hearing, where disciplinary action is taken if warranted. California, Connecticut, Massachusetts, Minnesota, New York, Pennsylvania, and Rhode Island have undertaken such procedure.



at the same time, it is also true that the
various phases of the investigation are
being carried out in a systematic and
thorough manner, and it is hoped that
the results will be of great value to the
public.

The following table shows the results of the
investigation for the year 1934.

State	Number of accidents	Number of deaths	Number of injuries
Alabama	1,234	56	1,234
Arkansas	987	45	987
California	2,345	78	2,345
Colorado	876	34	876
Connecticut	1,567	67	1,567
Delaware	654	23	654
District of Columbia	321	12	321
Florida	1,890	89	1,890
Georgia	1,123	54	1,123
Idaho	543	21	543
Illinois	2,109	72	2,109
Indiana	1,345	61	1,345
Iowa	789	31	789
Kansas	901	38	901
Kentucky	1,012	42	1,012
Louisiana	1,234	56	1,234
Maine	456	18	456
Maryland	1,123	47	1,123
Massachusetts	1,567	67	1,567
Michigan	1,890	89	1,890
Minnesota	1,234	56	1,234
Mississippi	876	34	876
Missouri	1,567	67	1,567
Montana	543	21	543
Nebraska	789	31	789
Nevada	456	18	456
New Hampshire	321	12	321
New Jersey	1,890	89	1,890
New Mexico	654	23	654
New York	2,345	78	2,345
North Carolina	1,234	56	1,234
North Dakota	543	21	543
Ohio	1,567	67	1,567
Oklahoma	876	34	876
Oregon	654	23	654
Pennsylvania	1,890	89	1,890
Rhode Island	321	12	321
South Carolina	987	45	987
South Dakota	543	21	543
Tennessee	1,123	54	1,123
Texas	2,109	72	2,109
Vermont	456	18	456
Virginia	1,234	56	1,234
Washington	1,567	67	1,567
West Virginia	654	23	654
Wisconsin	1,890	89	1,890
Wyoming	543	21	543

Statistics of accidents by location
The following table shows the results of the
investigation for the year 1934.
The states listed have been in the
in number of accidents, but in effort
several states are doing nothing at all.
The states with high accident rates are
that maintain an active and the
around plan of operation and the
bearing, where the highway is not
Connecticut, Massachusetts, New
and Rhode Island have the highest





MOTOR-VEHICLE TRAFFIC CONDITIONS IN
THE UNITED STATES

LETTER

FROM

THE SECRETARY OF AGRICULTURE

TRANSMITTING

PURSUANT TO LAW, A SECTION OF A REPORT ON A STUDY
AND RESEARCH OF MOTOR-VEHICLE TRAFFIC CONDI-
TIONS IN THE UNITED STATES, ENTITLED "OFFICIAL
INSPECTION OF VEHICLES," TOGETHER WITH RECOM-
MENDATIONS OF MEASURES FOR THEIR IMPROVEMENT

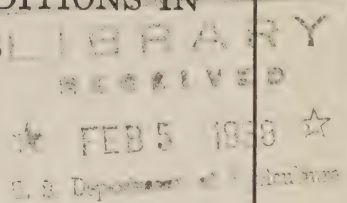
IN SIX PARTS

PART 4

OFFICIAL INSPECTION OF VEHICLES

JANUARY 7, 1938.—Referred to the Committee on Roads
and ordered to be printed, with illustrations

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON: 1938



For sale by the Superintendent of Documents
United States Government Printing Office
Washington, D. C.
Price 10 cents

LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 6, 1938.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

DEAR MR. SPEAKER: There is transmitted herewith a report entitled "Official Inspection of Vehicles." This is the fourth of a series of reports based upon investigations conducted by this Department under authority of the Act of June 23, 1936 (Public, No. 768, 74th Cong.), which authorized \$75,000 for a study of traffic conditions and measures for their improvement.

Other reports in the series deal with the following subjects: Non-Uniformity of State Motor-Vehicle Traffic Laws, Skilled Investigation at the Scene of the Accident Needed to Develop Causes, Inadequacy of State Motor-Vehicle Accident Reporting, Case Histories of Fatal Highway Accidents, and The Accident-Prone Driver.

Very truly yours,

H. A. WALLACE, *Secretary.*

Enclosure.

LETTER OF SUBMITTAL

DEPARTMENT OF AGRICULTURE,
BUREAU OF PUBLIC ROADS,
Washington, January 5, 1938.

THE SECRETARY OF AGRICULTURE.

DEAR MR. SECRETARY: In accordance with the requirements of the act of June 23, 1936 (Public, No. 768, 74th Cong.) which authorized \$75,000 for a study of traffic conditions and measures for their improvement, intensive studies have been made by this Bureau in cooperation with agencies of recognized standing in the field of traffic safety.

The results of these investigations have been included in a series of six reports. The fourth of the series entitled "Official Inspection of Vehicles" is submitted herewith. Other reports in the series deal with the following subjects: Non-Uniformity of State Motor-Vehicle Traffic Laws, Skilled Investigation at the Scene of the Accident Needed to Develop Causes, Inadequacy of State Motor-Vehicle Accident Reporting, Case Histories of Fatal Highway Accidents, and The Accident-Prone Driver.

Very truly yours,

THOMAS H. MACDONALD,
Chief of Bureau.

Enclosure.

MEMORANDUM FOR THE SECRETARY

THE SECRETARY OF THE DEPARTMENT OF JUSTICE
WASHINGTON, D. C. 20530

THE SECRETARY OF THE DEPARTMENT OF JUSTICE
WASHINGTON, D. C. 20530

The following information is being furnished to you for your information. It is derived from a report of the Federal Bureau of Investigation, dated and captioned as above.

The report of the Federal Bureau of Investigation, dated and captioned as above, contains information regarding the activities of the [redacted] in the [redacted] area. The report states that the [redacted] has been active in the [redacted] area for some time and has been engaged in various activities, including the [redacted] of [redacted] and the [redacted] of [redacted].

The report also states that the [redacted] has been active in the [redacted] area for some time and has been engaged in various activities, including the [redacted] of [redacted] and the [redacted] of [redacted].

The report further states that the [redacted] has been active in the [redacted] area for some time and has been engaged in various activities, including the [redacted] of [redacted] and the [redacted] of [redacted].

The report concludes that the [redacted] has been active in the [redacted] area for some time and has been engaged in various activities, including the [redacted] of [redacted] and the [redacted] of [redacted].

Very truly yours,
[Signature]

Enclosure

ACKNOWLEDGMENTS

The work reported herein was carried on under the direction of the Bureau of Public Roads, Thomas H. MacDonald, Chief. The Bureau obtained the cooperation of a number of organizations and institutions that had previously worked with outstanding effect in the particular field investigated. Special arrangements were made with the Highway Research Board of the National Research Council to permit the interested organizations already engaged in cooperative research with the board to be drawn upon for active participation in the investigation.

In order to benefit from the best thought of those who have given long and careful study to problems of highway safety, an advisory committee was invited to assist in the planning of the research and the preparation of the reports. The committee, composed of nationally recognized authorities in the field of traffic safety and representatives of organizations long active in the work, included the following members:

Dr. H. C. Dickinson, National Bureau of Standards, Chairman of the Highway Research Board.

Prof. C. J. Tilden, Yale University.

Dr. Alvhh R. Lauer, Iowa State College.

Dr. Harry R. DeSilva, Harvard Bureau for Street Traffic Research.

Prof. Robbins B. Stoeckel, Yale University.

Sidney J. Williams, National Safety Council.

Burton W. Marsh, American Automobile Association.

L. W. McIntyre, American Motorists' Association.

Dr. Ralph Lee, Automobile Manufacturers' Association.

Col. A. B. Barber, Chamber of Commerce of the United States.

W. J. Davidson, Society of Automotive Engineers.

A. W. Whitney, National Conservation Bureau.

Arthur W. Brandt, American Association of State Highway Officials.

John Q. Rhodes, Jr., American Association of Motor Vehicle Administrators.

The studies were conducted with the assistance of organizations represented on the advisory committee and that of numerous other organizations.

In making this report particular acknowledgment is due to Mr. A. W. Koehler, executive secretary of the American Association of Motor Vehicle Administrators, and secretary of the National Conference on Street and Highway Safety, who obtained from the State motor-vehicle authorities most of the material used in the report.

The motor-vehicle authorities in all of the States having compulsory State-wide motor-vehicle inspection responded generously in supplying this information.

For the Bureau of Public Roads the research program and preparation of this report were under the general supervision of Mr. E. W. James, Chief of the Division of Highway Transport, assisted by Mr. William G. Eliot, 3d, highway economist. For the Highway Research Board, Mr. R. W. Crum, Director, was in charge. Mr. John T. Lynch, associate highway engineer-economist with the Bureau of Public Roads, organized the material and prepared the report.

OFFICIAL INSPECTION OF VEHICLES

It is generally recognized that faulty motor-vehicle equipment is a principal cause of a small percentage of highway accidents, and it is surmised that such equipment may be a contributory cause in many accidents; but it is difficult to determine the extent to which mechanical defects contribute to our highway accident rate, because of the lack of the necessary data on which such a determination must be based. Evidence of mechanical defects is frequently destroyed when a car is wrecked, and even when not destroyed is not always noted and included in accident reports.

The committee on maintenance of the motor vehicle of the National Conference on Street and Highway Safety, in its 1930 report to the Secretary of Commerce, who was chairman of the conference, estimated that vehicular defects are a contributing factor in at least 15 percent of fatal motor-vehicle accidents. This conclusion was based on consideration of a special report obtained from the Massachusetts Registry of Motor Vehicles, together with reports from Connecticut, Oregon, and Cook County, Ill.

Conclusive evidence as to the effectiveness of periodic motor-vehicle inspections in preventing accidents cannot be found from existing statistical data. However, it seems that properly conducted inspections of all of the motor vehicles in a State would result in a higher mechanical standard and in a corresponding decrease in accidents due to mechanical causes.

"Save-a-life" or vehicle-inspection campaigns were first promoted more than 10 years ago. Vehicle-inspection campaigns have been undertaken in a number of States, nearly 4,000,000 motor vehicles having been inspected in campaigns of this type in Delaware, Maryland, Massachusetts, New Jersey, New York, and Pennsylvania, prior to 1930. These campaigns were mainly educational, there being no provision of law requiring a motorist to have his vehicle inspected against his wishes. Because inspection was voluntary, the effectiveness in removing the most dangerous vehicles from the highways, or in causing these vehicles to be properly repaired or adjusted, was correspondingly limited.

In the 1930 edition of the Uniform Vehicle Code, recommended by the National Conference on Street and Highway Safety for adoption by the States, there was a provision empowering the motor-vehicle authorities to inspect any motor vehicle to determine its compliance with the equipment and other provisions of the code. There were also included in this edition of the code certain specific provisions relative to individual items of equipment, such as lights, brakes, horns, mirrors, windshield wipers, etc. However, the code did not provide for the inspection of all of the motor vehicles in a State but simply permitted the motor-vehicle authorities to make an inspection when there was reason to believe that a vehicle was faulty in some particular.

In the revised Uniform Vehicle Code, recommended by the National Conference on Street and Highway Safety in 1934, an important further step was taken leading to State-wide inspection of all motor vehicles. In this edition of the code a mandatory provision was inserted requiring the motor-vehicle authority to designate a period, at least once each year but not more frequently than twice each year, during which all resident owners of motor vehicles must submit their vehicles to inspection and obtain for each a certificate of inspection and approval issued by an official inspection station.

Standards for determining the proper condition of the various items of equipment are still incomplete and the National Conservation Bureau and the American Association of Motor Vehicle Administrators are now sponsoring a project being undertaken through the American Standards Association for the purpose of establishing standards of inspection.

A brief survey has been undertaken by correspondence with the various motor-vehicle authorities in States having State-wide compulsory motor-vehicle-inspection laws, for the purpose of ascertaining the extent to which compulsory motor-vehicle-inspection provisions have been placed in effect in different States, the procedure being used in each State to make these provisions effective, and the results of inspections so far as is ascertainable from records up until this time. It is the purpose of this report to summarize the findings of this survey.

Fifteen States (Arkansas, Colorado, Connecticut, Delaware, Maine, Maryland, Massachusetts, Nebraska, New Hampshire, New Jersey, New Mexico, Pennsylvania, Utah, Vermont, and Virginia) now have State-wide, compulsory periodic motor-vehicle inspection and Washington has a law providing for such inspection which has not yet been placed into effect. Six additional States (Illinois, Iowa, Minnesota, Oregon, Tennessee, and Texas) have laws that are not State-wide in application but apply only to specified cities or classes of municipalities. New York has a law that requires the inspection of specified types of commercial vehicles only.

The survey covers only the 15 States having laws State-wide in scope, applicable to all motor vehicles, now effective or in the process of being made effective. In some of these States the law simply empowers the motor-vehicle authority to make periodic inspection of all motor vehicles and to revoke the licenses of vehicles failing to pass these inspections. In other States the law is mandatory and requires the motor-vehicle authority to make the inspections. In some States the equipment requirements are set out in some detail in the law, whereas in others the motor-vehicle authority is empowered or directed to establish the requirements.

Table 1 summarizes the inspection practices and the results of inspections as determined from correspondence with the motor-vehicle authority in each State. In a number of States no information is available on such questions as the percentage of vehicles failing to meet the inspection requirements, either because no records are kept or because no report is made to the central authority covering this point. In all cases where information concerning a particular point was not supplied by the State authority, regardless of cause, the space reserved for this information was left blank in the table. While not complete, the table summarizes all of the pertinent information that could be obtained in the scope of the survey.

In Connecticut, Delaware, and New Jersey inspection is made, or is to be made, in stations owned and operated by the State. Washington is not included in the survey because the motor-vehicle-inspection law has not yet been made effective, but the law provides for the erection and operation of State-owned inspection stations. In the remaining 12 States inspection is made by privately owned garages, officially authorized to make such inspections by the motor-vehicle authority, but in 2 of these (Arkansas and Nebraska) municipalities are authorized to establish municipally owned stations for the inspection of vehicles registered within the municipality.

The maximum fee for inspection reported by any State is 50 cents. In Delaware, Maryland, New Mexico, and Virginia there is no charge.

In 13 of the 15 States inspection reports are made to the State motor-vehicle authority. Regular reports are not required in Colorado and New Mexico. In Colorado, however, duplicate copies of inspection records must be retained in the files at the inspection stations and must be open for inspection at all times.

New Mexico requires three inspections per year; Arkansas, Colorado, Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, Pennsylvania, and Virginia require two inspections per year; Delaware, Maryland, Nebraska, and Utah require only one inspection per year; and in Vermont the number of inspections is variable and is fixed by the motor-vehicle commission.

In New Mexico inspection covers only lights, brakes, and steering gear, whereas in the other States a number of additional items are covered, such as license plates, windshield, windshield wiper, horn, mirror, muffler, etc.

Information on the percentage of vehicles inspected failing to meet requirements was obtained from Connecticut, Delaware, Massachusetts, New Hampshire, Pennsylvania, Vermont, and Virginia; and in all of these, except Vermont, percentages were obtained for two or more periods. The highest percentage failing to meet inspection requirements in 1936, reported by any State, was 86.8 percent, reported by Vermont, and the lowest reported by any State was 34 percent, reported by Connecticut.

In practically all cases, where the results of two or more inspections were reported, the number of vehicles failing to meet inspection decreased with each succeeding inspection period. This decrease is particularly striking in Delaware, where 64 percent failed to pass in 1935 and only 35.2 percent failed to pass in 1937.

The seven States listed above and also Maine and Maryland supplied information as to the percentage of the vehicles inspected failing to meet the requirements for the separate items of inspection. Because of the fact that one vehicle frequently fails to meet the requirements for two or more items of equipment the figures contain duplications of vehicles and it is not possible to calculate from them the percentage of vehicles inspected failing to meet requirements, without additional information.

During the latest inspection period reported, lights failed to meet requirements more frequently than any other item of equipment in Maine, Maryland, Massachusetts, New Hampshire, Pennsylvania, Vermont, and Virginia, and brakes failed to meet requirements more frequently than other items of equipment in Connecticut and Delaware. The largest percentage of vehicles inspected with lights not functioning in accordance with requirements in the latest inspection

period was 72.7 percent, reported by Vermont, and the lowest was 12 percent, reported by Connecticut. The largest percentage of vehicles inspected with brakes not functioning in accordance with requirements in the latest inspection period was 36.1 percent, reported by Vermont. The relation between the number of vehicles inspected and the number failing to meet requirements naturally varies from one State to another in accordance with the inspection requirements and the rigidity of the inspections. The percentages for a particular State should therefore be interpreted in the light of the requirements and the inspection procedure in that State.

The procedure following inspection varies somewhat in the different States, but in most cases stickers are affixed to the windshields of vehicles passing inspection and the owners of vehicles operated on the highways without these stickers are subject to arrest by the State police. In some cases licenses for vehicles found faulty are suspended or revoked, and Delaware reports that all vehicles must be approved by an inspection station before a new license is issued at the beginning of the year.

Table 2 gives a digest of the principal equipment requirements in each State together with a digest of the requirements contained in the Uniform Vehicle Code, for purposes of comparison. The requirements included in the table are those that are actually in effect or are being placed in effect in the different States. In most cases they are taken from instructions to inspection stations. In some cases, however, the provisions contained in the law were digested either because they are referred to by instructions to inspection stations or because the instructions have not yet been prepared.

Where the words "approved type" or "approved" are used in the table, approval by the motor-vehicle authority in the State is meant. In some cases lists of approved types, or approved specifications for a number of types are issued by the motor-vehicle authority.

It will be noted that no State has adopted the Uniform Vehicle Code in its entirety, although some have adopted a large number of its provisions, as well as additional provisions. Also, State provisions differ from the corresponding code provisions in many cases.

The distance at which the main beam of a dual-beam headlight must enable persons or objects to be distinguishable is 350 feet in Arkansas, Colorado, New Jersey, and Pennsylvania; 200 feet in Connecticut, Nebraska, New Hampshire, New Mexico, and Virginia; and 150 feet in Vermont, the remaining States having no specific provision. The distance specified in the uniform code is 350 feet.

The distance at which a single-beam headlight must enable persons or objects to be distinguishable is 200 feet in Arkansas, Colorado, New Jersey, New Mexico, and Pennsylvania, which agrees with the uniform code provision. The remaining States have no specific provision of this nature relative to single-beam headlights.

The distance in which four-wheel service-brakes on passenger cars must permit the car to be stopped from a speed of 20 miles per hour is 40 feet in Colorado; 30 feet in Connecticut, Maine, New Jersey, and Pennsylvania; 28 feet in New Hampshire; 25 feet in Arkansas, Massachusetts, Utah, and Virginia; 24.7 feet in Maryland; 22 feet in Vermont; and 20 feet in New Mexico. Delaware and Nebraska do not specify the stopping distance. Delaware requires that the braking energy must be equal to 60 percent of the weight of the vehicle. In this State the law requires that the service brakes shall be adequate to

stop the vehicle within a distance of 30 feet, but the outline of procedure for lane inspections indicates that the test is made to determine whether or not the brakes have energy to the extent of 60 percent of the weight of the vehicle. In Nebraska the inspection law was passed in 1937 and instructions to service stations are not yet available. The uniform code specifies a stopping distance of 30 feet for service brakes. This requirement applies to stopping upon dry asphalt or concrete pavement surface free from loose material where the grade does not exceed 1 percent. The conditions under which the stopping distance specified is applicable in the various States are the same as or similar to the conditions specified in the uniform code.

Windshield wipers are required on all vehicles in 11 States (Arkansas, Colorado, Connecticut, Delaware, Massachusetts, Nebraska, New Jersey, Pennsylvania, Utah, Vermont, and Virginia). The uniform code specifies that windshield wipers must be included in the equipment. Connecticut requires automatic windshield wipers on common or contract carriers.

Only a few of the more important equipment requirements have been discussed, but a comparison of the remaining requirements may be made by examination of table 2. It can be seen that there is a considerable lack of uniformity in the requirements, notwithstanding the fact that the uniform code has been used as a guide, in most cases. Likewise, table 1 shows that the procedure for making the requirements effective varies considerably in the different States. The results also vary, the percentage of vehicles inspected failing to meet requirements being much higher in some States than in others. In all States for which such records are available, however, the records show that the number of vehicles needing repairs or adjustments, before being regarded as in proper mechanical condition to permit safe operation on the highways, is considerable.



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New Jersey

New Mexico

Pennsylvania

Utah

Vermont

Virginia

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TABLE 2.—Digest of equipment requirements in motor-vehicle inspection

	Item	Uniform vehicle code	Arkansas	Colorado	Connecticut	Delaware	Maine	Maryland	Massachusetts	Nebraska	New Hampshire	New Jersey	New Mexico	Pennsylvania	Rhode Island	Vermont	Virginia
Headlights	General power requirements	As approved.	32 maximum.		32 maximum.		32 maximum. Free from discoloration.	Minimum 10, maximum 32. Free from discoloration.	Either 21 or 32.	As approved.	As approved.	32 maximum.	As approved.	Proper candle power. Flareless, unglazed, bulbs undecolored. Clean, uncracked.	Proper candle power. Flareless, unglazed, bulbs undecolored. Clean, uncracked.	21 or 32. Free from discoloration.	Either 21 or 32. All filaments must burn.
Lenses		Unbroken and properly matched with bulb. Free from tarnish or dirt, properly maintained.			Proper installation, matched, unbroken, uncracked. Clean, unglazed, free from brass spots.		Clean and bright.		Approved type. Undersized, highly polished, not rusted, properly focused.		Approved type. Undersized, highly polished, not rusted.	Unbroken, uncracked, properly matched and unglazed.		Undersized, highly polished, not rusted.	Good condition.	Approved type. Bright.	Clean, uncracked, unbroken. Approved type.
Reflector	Minimum height of beam Minimum beam width	Left or left side of vehicle 10 inches above horizontal at 2 feet; right of left side of vehicle 10 inches above horizontal at 2 feet; anywhere 42 inches at 30 feet; anywhere 42 inches at 75 feet. Adjustable to high intensity portion of light.	42 inches at 75 feet.	Horizontal or 42 inches at 75 feet.	Horizontal through lamp center.	42 inches.	Lamp center at 25 feet.			Horizontal or 42 inches at 75 feet.	Lamp center at 25 feet.	Left or left side of vehicle 10 inches below horizontal at 25 feet; right of left side of vehicle 10 inches below horizontal at 25 feet; anywhere 42 inches at 75 feet. Adjustable to high intensity portion of light.	Horizontal through lamp center.	Horizontal at 25 feet.	42 inches at 75 feet.	6 inches above horizontal.	Horizontal at 25 feet.
Fluorescent beam			42 inches at 75 feet. Road surface at 100 feet.	42 inches at 75 feet.	4 inches at 25 feet.				2 feet at 30 feet.	42 inches at 75 feet.	42 inches at 75 feet.			42 inches at 75 feet.		42 inches at 75 feet.	12 inches at 75 feet.
Maximum size of beam			300 feet.	300 feet.	300 feet.				300 feet.	300 feet.	300 feet.	30 feet.	300 feet.	300 feet.	300 feet.	150 feet.	300 feet.
Maximum size of beam			300 feet.	300 feet.	300 feet.				300 feet.	300 feet.	300 feet.	30 feet.	300 feet.	300 feet.	300 feet.	150 feet.	300 feet.
Other requirements		Vehicle restricted to 20 miles per hour if light is equipped with revolving part or object at a distance of only 75 feet.	Vehicles equipped with lights capable of illuminating at 20 miles per hour restricted to 20 miles per hour. If lights capable of illuminating persons or objects at only 75 feet.	Proper illumination of any "on" position of switch. Free from glare. Vehicles restricted to 20 miles per hour if lights capable of illuminating persons or objects at only 75 feet.	Proper focus and tilt of light.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type. Light must not be in such condition as to be a fire hazard or result in failure of same lighted unit.	Approved type.	Both headlights must light on both forward and dependent road lines.		Not required.	Approved type. All contacts good.
Tail light	General power requirements	As approved.	Red.	Red.	Red.	Red.	Red.	Red.	Red.	Red.	Red.	Red.	Yellow or red.	Red.	Red.	Red.	Red.
Fluorescent beam			500 feet.	500 feet.	500 feet.				500 feet.	500 feet.	500 feet.	500 feet.	500 feet.	500 feet.	500 feet.	500 feet.	300 feet.
Maximum size of beam			500 feet.	500 feet.	500 feet.				500 feet.	500 feet.	500 feet.	500 feet.	500 feet.	500 feet.	500 feet.	500 feet.	300 feet.
Other requirements		Red reflector required on rear of all vehicles except passenger cars for private use.	Red reflector required if rear of all vehicles except passenger cars for private use.	Red reflector required unless tail-light lens is approved reflector type.	Lens unbroken, uncracked, and not discolored.				Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.		Lens clean, uncracked, unbroken. Bulbs or reflectors must be in good condition.	Approved type. All contacts good.
Chassis	Size of chassis on which required	More than 80 inches.	More than 80 inches.	More than 80 inches.	72 inches or more.	More than 80 inches.	84 inches or more.	80 inches or more.	80 inches or more.	80 inches or more.	More than 72 inches.	80 inches or more.	80 inches or more.	80 inches or more.	80 inches or more.	80 inches or more.	80 inches or more.
Color		Green.	Green.	Green.	Crystal or amber.	White.	Green or amber.	Green.	Green.	Green.	Green.	White.	White.	White.	Green.	Green.	Green.
Material		Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.	Crystal or amber.
Location		Left side.	Left side.	Left side.	Left side.	Left side.	Left side.	Left side.	Left side.	Left side.	Left side.	Left side.	Left side.	Left side.	Left side.	Left side.	Left side.
Other requirements		Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.
Turn or stop signals	Direction signal device, location on which required.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.	Approved type.
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MOTOR-VEHICLE TRAFFIC CONDITIONS IN
THE UNITED STATES

LETTER

FROM

THE SECRETARY OF AGRICULTURE

TRANSMITTING

PURSUANT TO LAW, A SECTION OF A REPORT ON A
STUDY AND RESEARCH OF MOTOR-VEHICLE TRAFFIC
CONDITIONS IN THE UNITED STATES, ENTITLED
"CASE HISTORIES OF FATAL HIGHWAY ACCIDENTS,"
TOGETHER WITH RECOMMENDATIONS OF MEASURES
FOR THEIR IMPROVEMENT

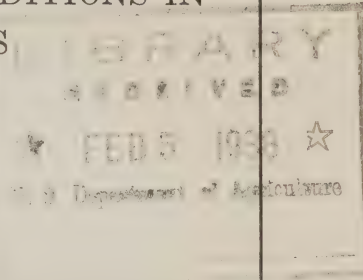
IN SIX PARTS

PART 5

CASE HISTORIES OF FATAL HIGHWAY ACCIDENTS

JANUARY 17, 1938.—Referred to the Committee on Roads
and ordered to be printed, with illustrations

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1938



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LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE,
Washington, January 14, 1938.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

DEAR MR. SPEAKER: There is transmitted herewith a report entitled "Case Histories of Fatal Highway Accidents." This is the fifth of a series of reports based upon investigations conducted by this Department under authority of the act of June 23, 1936 (Public, No. 768, 74th Cong.), which authorized \$75,000 for a study of traffic conditions and measures for their improvement.

Other reports in the series deal with the following subjects: Non-uniformity of State Motor-Vehicle Traffic Laws, Skilled Investigation at the Scene of the Accident Needed to Develop Causes, Inadequacy of State Motor-Vehicle Accident Reporting, Official Inspection of Vehicles, and The Accident-Prone Driver.

Very truly yours,

H. A. WALLACE, *Secretary.*



LETTER OF SUBMITTAL

DEPARTMENT OF AGRICULTURE,
BUREAU OF PUBLIC ROADS,
Washington, January 10, 1938.

The SECRETARY OF AGRICULTURE.

DEAR MR. SECRETARY: In accordance with the requirements of the act of June 23, 1936 (Public, No. 768, 74th Cong.), which authorized \$75,000 for a study of traffic conditions and measures for their improvement, intensive studies have been made by this Bureau in cooperation with agencies of recognized standing in the field of traffic safety.

The results of these investigations have been included in a series of six reports. The fifth of the series entitled "Case Histories of Fatal Highway Accidents," is submitted herewith. Other reports in the series deal with the following subjects: Nonuniformity of State Motor-Vehicle Traffic Laws, Skilled Investigation at the Scene of the Accident Needed to Develop Causes, Inadequacy of State Motor-Vehicle Accident Reporting, Official Inspection of Vehicles, and The Accident-Prone Driver.

Very truly yours,

THOMAS H. MACDONALD,
Chief of Bureau.



ACKNOWLEDGMENTS

The work reported herein was carried on under the direction of the Bureau of Public Roads, Thomas H. MacDonald, chief. The bureau obtained the cooperation of a number of organizations and institutions that had previously worked with outstanding effect in the particular field investigated. Special arrangements were made with the Highway Research Board of the National Research Council to permit the interested organizations already engaged in co-operative research with the board to be drawn upon for active participation in the investigation.

In order to benefit from the best thought of those who have given long and careful study to problems of highway safety, an advisory committee was invited to assist in the planning of the research and the preparation of the reports. The committee, composed of nationally recognized authorities in the field of traffic safety and representatives of organizations long active in the work, included the following members:

Dr. H. C. Dickinson, National Bureau of Standards, chairman of the Highway Research Board.

Prof. C. J. Tilden, Yale University.

Dr. Alvhh R. Lauer, Iowa State College.

Dr. Harry R. DeSilva, Harvard Bureau for Street Traffic Research.

Prof. Robbins B. Stoeckel, Yale University.

Sidney J. Williams, National Safety Council.

Burton W. Marsh, American Automobile Association.

L. W. McIntyre, American Motorists' Association.

Dr. Ralph Lee, Automobile Manufacturers' Association.

Col. A. B. Barber, Chamber of Commerce of the United States.

W. J. Davidson, Society of Automotive Engineers.

A. W. Whitney, National Conservation Bureau.

Arthur W. Brandt, American Association of State Highway Officials.

John Q. Rhodes, Jr., American Association of Motor Vehicle Administrators.

The studies were conducted with the assistance of organizations represented on the advisory committee and that of numerous other organizations.

In making this report particular acknowledgment is due to Yale University and to the various State and municipal authorities who facilitated the use of their accident records.

For the Bureau of Public Roads the research program and preparation of this report were under the general supervision of Mr. E. W. James, chief of the Division of Highway Transport, assisted by Mr. William G. Eliot, 3d, highway economist. For the Highway Research Board, Mr. R. W. Crum, director, was in charge. The study herein reported was directed by Prof. C. J. Tilden of Yale University, assisted by Mr. C. Russell Graff, previously with the Connecticut State Highway Department, who supervised the field work of compiling the records. The statistical summaries were prepared by Mr. Rolland S. Wallis, formerly of the Pennsylvania Economic Council. The completed report was drafted by Mr. E. H. Holmes, highway engineer-economist, Bureau of Public Roads.

CASE HISTORIES OF FATAL HIGHWAY ACCIDENTS

The inadequacy of summarized accident data published by the various States and cities prompted this attempt to explore the possibilities of studying accident causes through detailed case histories compiled from official sources. Case histories of 1,715 fatal highway accidents were taken from official records in the States of Connecticut, Indiana, Massachusetts, Michigan, New Jersey, New York, Pennsylvania, and Rhode Island, and the cities of Cincinnati and Cleveland, Ohio; Chicago and Evanston, Ill.; Detroit, Mich.; Louisville, Ky.; Milwaukee, Wis.; and South Bend, Ind. In some cases the official records were supplemented by information from outside sources. The reports were confined to accidents that occurred in 1936 in order to give a cross section of the year's fatal accidents in each State or city.

The purpose of the research was to obtain as much information as possible concerning the fundamental factors involved in highway accidents and any possible light on accident-prevention measures. It was necessarily assumed, of course, that the facts were as reported, except where there were inconsistencies or contradictions. Although it is proposed to conduct a detailed statistical analysis of the information at a later date, and a portion of the reports have, for the purposes of this report, been subjected to a partial statistical review, the principal object of assembling a large number of case studies was to get away from a mere mechanical summarization in the direction of more definite human factors and relationships.

Each story, compiled after a study of all the available pertinent data, such as reports of the police, coroner, motor-vehicle inspector, the operator or individuals involved, and witnesses, court action, and newspaper accounts, seeks to show as clearly as possible the circumstances—physical, mechanical, and human—that resulted in a specific accident. It is only by reading over these stories in detail that the contributing factor and the resulting actions of police and motor-vehicle inspectors can be clearly impressed on the mind. It is hoped that this collection will show some of the weak spots in highway transportation safety factors in the various States today, and leave some suggestions of the remedies that must be applied if loss of life is to be curtailed.

FINDINGS

(1) Some significant factors in the existing accident situation can be evaluated by analysis of existing public records. Other factors will require special research and analysis of technical investigations as they occur. In the former category may be placed the relative frequency of different kinds of accidents, effects of darkness, ages of persons involved, and effects of physical conditions. In the latter are the relation of speed to accidents, drivers' attitudes, condition of

vehicles and how circumstances must combine to produce conditions resulting in accidents.

(2) Relatively few accidents can fairly be charged to any one act or condition. Accidents generally result from multiple contributing circumstances, an average of nearly three important factors having been found to contribute toward each accident.

(3) Great leniency, lack of uniformity in disciplinary action, and frequently the absence of any such action are apparent in the cases studied.

(4) The data of accidents when drawn from even the best available records are generally inadequate to show all conditions of the accident, especially with respect to the vehicle and the highway.

STATISTICAL REVIEW

A partial statistical review was made of the 892 accident reports which had been summarized up to May 12, approximately half of the entire number of cases compiled during the course of the survey. The purpose of this statistical review was twofold. First, it was desired to ascertain whether the selected sample of accident cases was reasonably representative of all the fatal accidents occurring in the United States during 1936; and, second, it was desired to evaluate roughly the relative order of importance of the several accident causes, and of the various types of accidents.

COMPARISONS WITH STATISTICS REPRESENTATIVE OF NATIONAL CONDITIONS

The following graphs have been prepared for the purpose of comparing certain features of the accidents investigated in this study with the figures reflecting national conditions. The comparisons were made for test purposes only and many have no particular significance otherwise. Because of incomplete and inconsistent reporting of accident data by States and political subdivisions, for the whole country, only estimates are available regarding accidents and their nature. The source of the figures used was the recent publication of the Travelers' Insurance Co. of Hartford, Conn., entitled "You Bet Your Life." Exact agreement in all respects between the sample data and the estimates for the country cannot be expected, since no attempt was made to select cases by types in strict accordance with the proportions by types in general estimates. For example, if the sample contains a too large proportion of urban or rural accidents, differences may be expected in any comparisons in which the type of accident is influenced by the locality. Accidents involving pedestrians or those caused by violation of traffic-signal indications are in all probability more frequent in urban areas.

Despite the method of selection, which required the collection of data from areas in which the most satisfactory reports were available, and which limited the cases to those with practically complete information as to the circumstances surrounding the accidents, the 892 cases studied appear to present a reasonably true picture of the accident situation. So close was the similarity between these accidents and the estimates for the country in the various respects in which they could be compared that there can be little doubt that the

1,715 cases compiled in the complete study constitute a reasonably representative sample of all fatal accidents.

Distribution by hour of the day.—Of the 892 accident reports compiled, the time of occurrence could be determined in 886 cases. Nationwide figures for the hourly distribution of fatal accidents were not available, but it was possible to compare the hours of occurrence of these 886 fatal accidents with the estimated number of persons killed in motor-vehicle accidents by hours. In using "persons killed" instead of "fatal accidents" the reasonable assumption that the number of fatalities per accident is uniform throughout the day

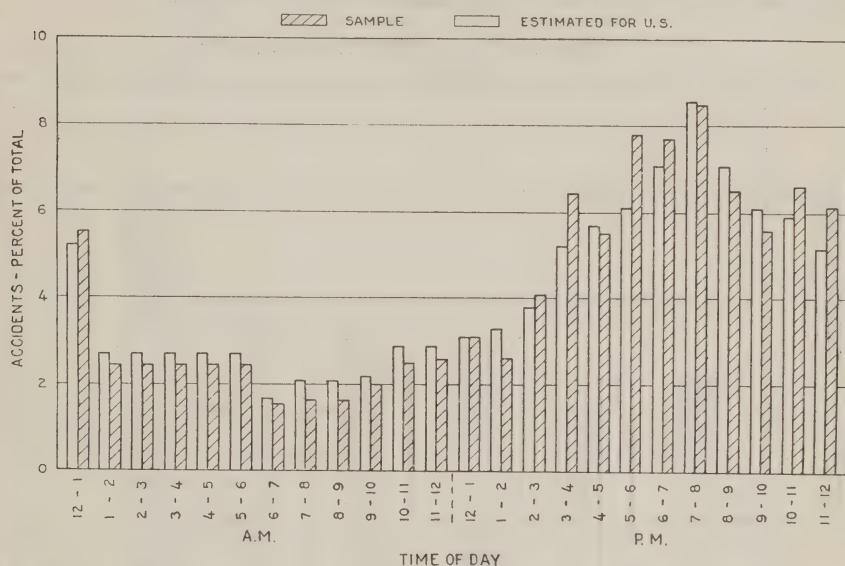


FIGURE 1.—COMPARISON OF HOURLY DISTRIBUTION OF ACCIDENTS IN SAMPLE WITH TOTAL FATALITIES FOR THE UNITED STATES. FIGURES FROM 1 A. M. TO 6 P. M. REPRESENT AVERAGES FOR THESE HOURS, SINCE THE UNITED STATES TOTALS ARE NOT SEGREGATED BY HOURS DURING THIS PERIOD.

must be accepted. No segregation by hours of persons killed between 1 and 6 in the morning was available, so the average figures for those hours were used. Figure 1 shows the close agreement between the data from the two sources.

Distribution by day of the week.—Figure 2 shows the distribution, by the days of the week, of the accidents considered in this analysis, and also the distribution for estimated persons killed in motor-vehicle accidents in the entire country in 1936. It will be seen that the two compare favorably, although in this case it must be assumed that the number of fatalities per fatal accident does not vary with the day of the week.

Distribution by accident type.—Figure 3 shows a comparison between the estimated fatalities occurring throughout the country and those analyzed in this study with respect to the types of accidents in which they occurred. The proportion of pedestrian accidents is considerably in excess of the estimated proportion for the country as a whole, due, very likely, to the inclusion in the sample of an over-large proportion of urban accidents, and perhaps influenced also by

the fact that reports were collected largely from the more populous industrial States where there may well be more than an average number of pedestrians on the rural highways. The deficiency in reports of collisions with railroad trains is probably due to the fact that only accidents where complete reports were available were included; and it is seldom that the operator or passengers of a motor vehicle can submit reports following a fatal grade-crossing wreck. The difference between the figures for noncollision accidents is not readily explainable.

Despite these differences, however, it is felt that the distribution is reasonably close to that of estimates for all fatalities.

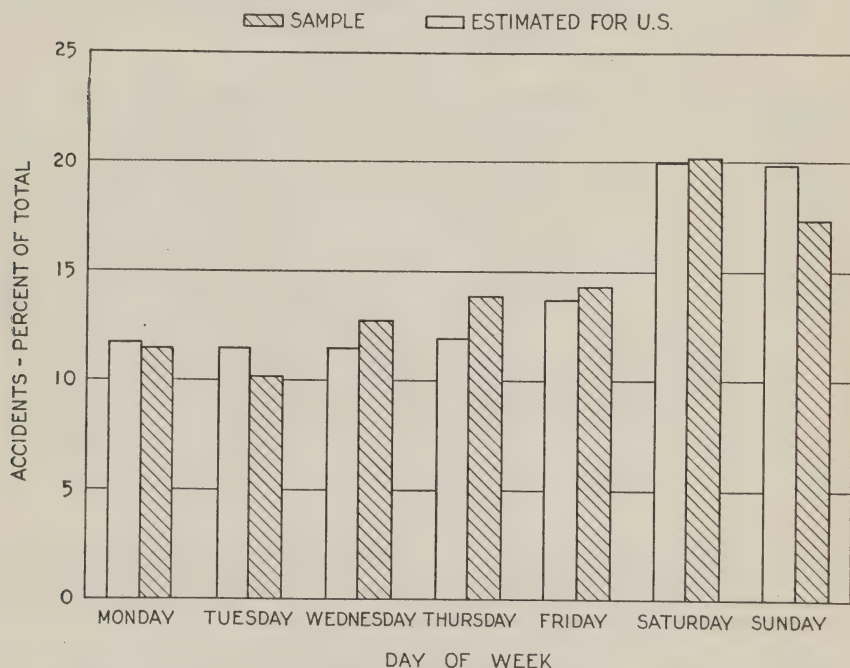


FIGURE 2.—COMPARISON OF DAILY DISTRIBUTION OF ACCIDENTS IN SAMPLE WITH TOTAL FATALITIES FOR THE UNITED STATES.

Distribution by type of vehicle.—Of the 1,091 vehicles involved in these accidents, the reports identified all but 25 as to their types. Figure 4 shows a comparison of these vehicles with the estimate of those involved in all fatal accidents throughout the country. Here a very close agreement is found, the greatest difference being in the item "Taxicabs." The fact that 2 percent of the vehicles identified in the study were taxis against a national average of 0.9 is undoubtedly explained by the overlarge proportion of city accidents included in the sample. The relative frequency of occurrence of the various types of vehicles is no index to their relative safety, since the total vehicle mileage accumulated by each type is not known.

Distribution of drivers by ages and experience.—Close agreement between the ages of the drivers involved in fatal accidents investigated in this study, and estimated figures for the entire country is evidenced in figure 5. The age groups are necessarily broad, since classification by smaller groups is not possible from the national figures. Included in this study were 1,041 drivers, as compared with 41,720 in the country as a whole.

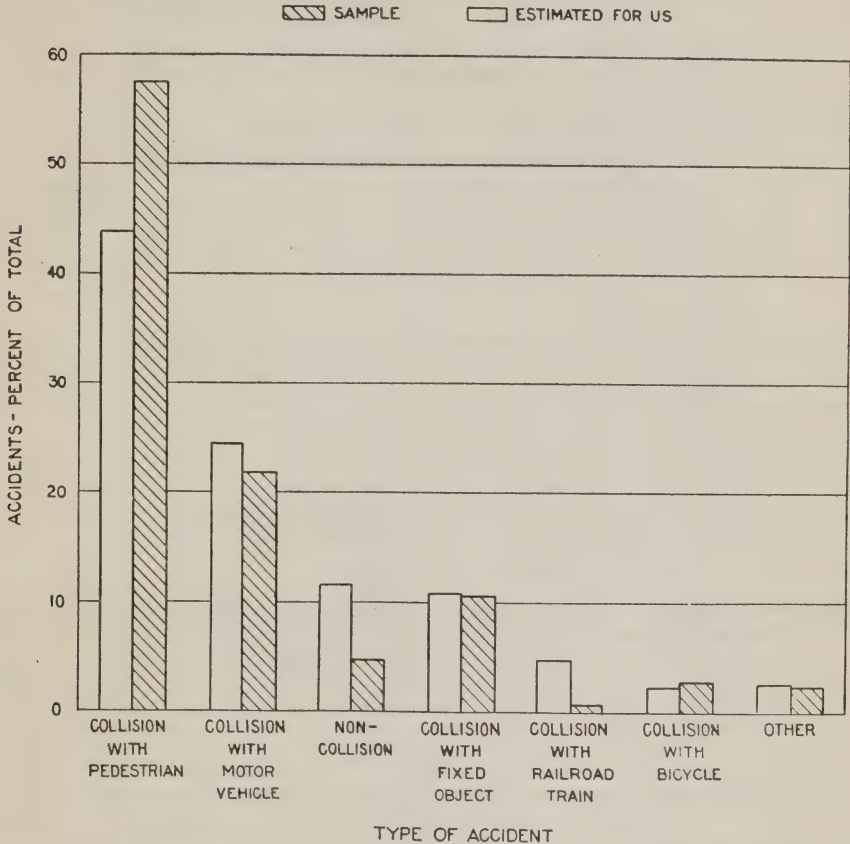


FIGURE 3.—COMPARISON BETWEEN FATALITIES IN SAMPLE AND TOTAL FOR THE UNITED STATES WITH RESPECT TO THEIR DISTRIBUTION BY TYPES.

Figure 5 also compares the driving experience of 900 of the drivers involved in the accidents investigated here with the estimated experience of drivers involved in all fatal accidents. Again there is very close agreement between the two.

Distribution of drivers by sex.—Of the drivers involved in the accidents investigated in this study, 6 percent were female, as against an estimated average of 6.1 percent for the country as a whole. Aside from their close agreement, these figures have no significance since

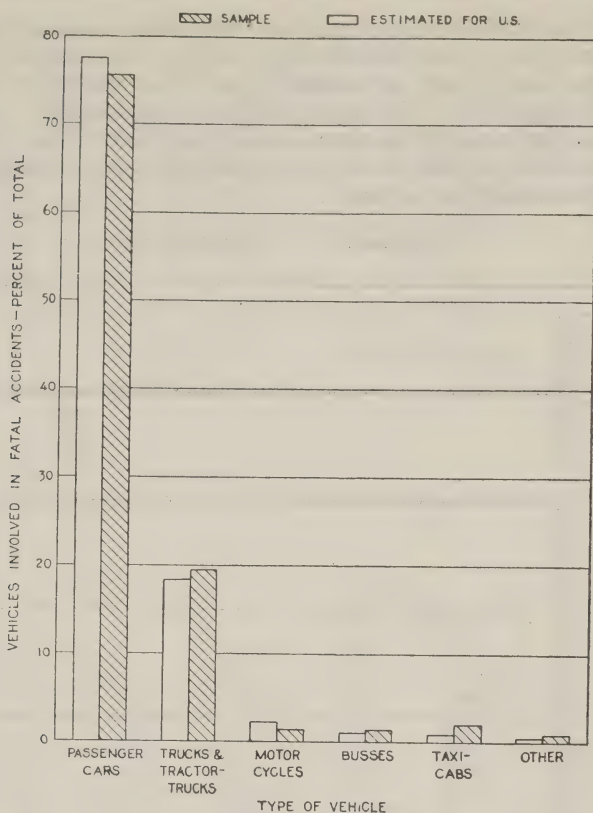


FIGURE 4.—COMPARISON BETWEEN FATAL ACCIDENTS IN SAMPLE AND TOTAL FOR THE UNITED STATES WITH RESPECT TO THE TYPE OF VEHICLE INVOLVED.

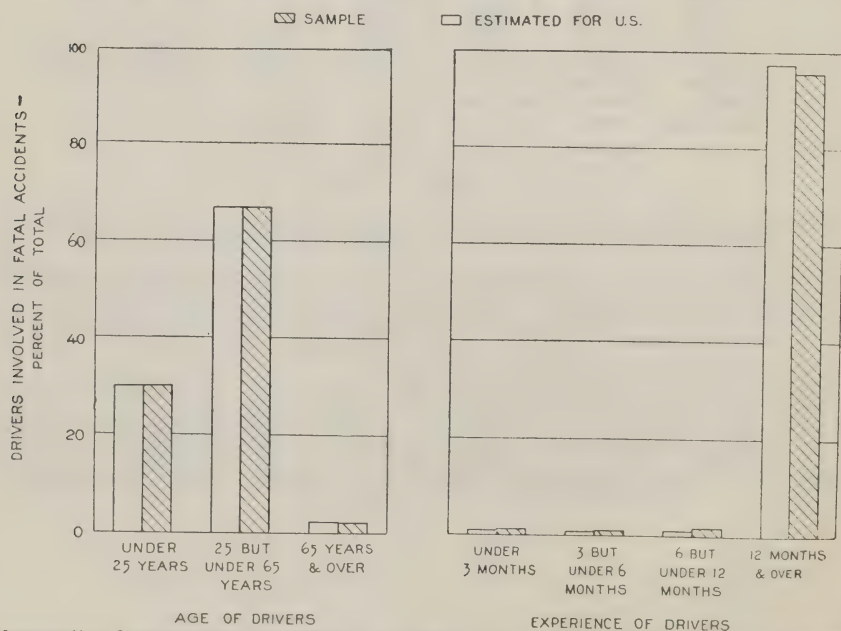


FIGURE 5.—COMPARISON BETWEEN ACCIDENTS IN SAMPLE AND TOTAL FOR THE UNITED STATES WITH RESPECT TO THE AGE AND EXPERIENCE OF THE DRIVERS INVOLVED.

it is not known what percentage of the total vehicle mileage is driven by women.

CIRCUMSTANCES SURROUNDING THE ACCIDENTS

The 892 accidents considered in this preliminary statistical review, classified into their various types, were compared with the distribution of all motor-vehicle fatalities in figure 3. This classification is shown in more detail in table 1.

TABLE 1.—*Distribution of 892 fatal accidents by type of accident*

Type of accident	Number	Percent	Type of accident	Number	Percent
Collision with—			Collision with—Continued.		
Pedestrian.....	539	60.4	Railroad train.....	5	0.6
Other motor vehicle.....	178	20.0	Horse-drawn vehicle.....	2	0.2
Fixed object.....	82	9.1	Noncollision.....	44	5.0
Bicycle.....	25	2.8			
Streetcar.....	11	1.2	Total.....	892	100.0
Play vehicle.....	6	0.7			

The most significant feature of this tabulation is the high percentage of pedestrian fatalities. It is more likely of course that a collision between a motor vehicle and a pedestrian will result in a fatality than would a collision between two vehicles, or between a vehicle and a fixed object. Nevertheless, it appears that pedestrians must be unduly exposed to accidents, a possibility which is clearly impressed on the mind by a reading of the case histories accumulated during the course of the study. Particularly noticeable is the large number of pedestrian fatalities at night, a feature which will be subject to a thorough analysis in the statistical review of the entire 1,715 cases. In this connection a study of all accidents by hours, although not classified as to pedestrian and other types (see fig. 1) shows that 66 percent of the fatal accidents occur during the hours of darkness. The exact import of this high percentage of night accidents cannot be determined, since the percentage of vehicle mileage driven at night is not known. However, the figure is particularly striking when it is considered that the total travel at night is certainly less than that during the daylight hours.

Distribution of fatalities by class of individual.—In the 892 accidents investigated, 965 fatalities occurred, an average of 1.08 per accident. These fatalities were distributed among the individuals involved as shown in table 2.

TABLE 2.—*Distribution of fatalities, by class of individual*

Class of individual	Number	Percent	Class of individual	Number	Percent
Pedestrians.....	555	57.5	Play vehicle riders.....	7	0.7
Passengers.....	216	22.4	Occupants of other vehicles...	2	.2
Drivers.....	157	16.3			
Bicycle riders.....	28	2.9	Total.....	965	100.0

Significant in this tabulation are, of course, the pedestrian fatalities. It is perhaps not equally significant, but certainly of interest

that 22.4 percent of the persons killed or fatally injured were passengers, while but 16.3 percent were drivers. This apparent difference between the hazard to passengers and to drivers cannot be accurately evaluated since the ratio of the number of passengers to drivers in the vehicles involved in these accidents is not known. However, since surveys in various sections of the country, including both urban and rural areas show an average of about two occupants (including the driver) per vehicle, it seems reasonable to conclude that it is about one-third more dangerous to be a passenger than a driver.

An investigation of the accidents of the types likely to result in the fatality of an occupant of the vehicle, and in which it was definitely known that the drivers were accompanied by passengers showed that of 277 fatalities, but 59 were drivers. This ratio of pas-

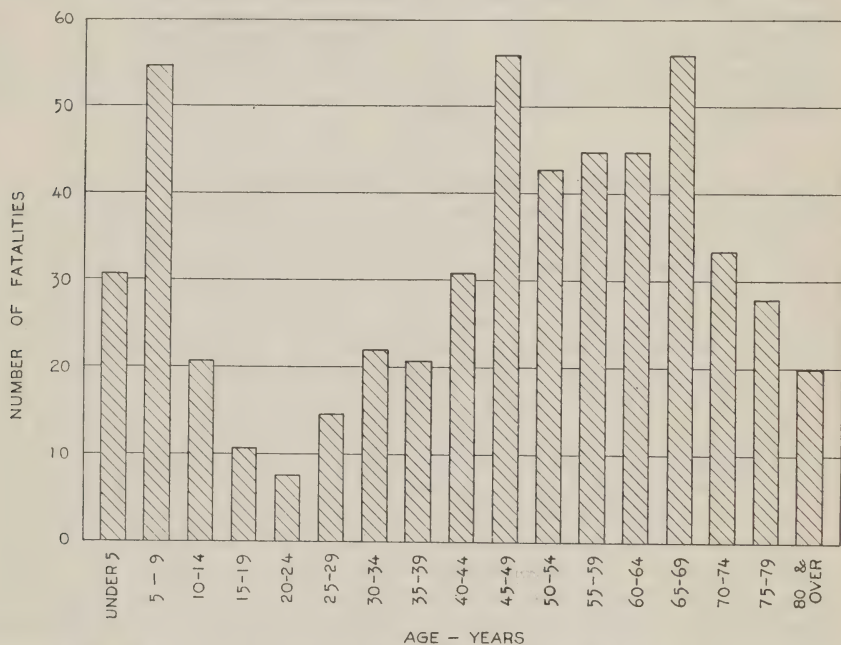


FIGURE 6.—DISTRIBUTION OF PEDESTRIAN FATALITIES BY AGE GROUPS

senger to driver fatalities of nearly 4 to 1 seems distinctly out of proportion to what might reasonably be expected to be the ratio of passengers to drivers.

Pedestrian fatalities.—Of the 555 pedestrians killed in these accidents, the ages of 542 were reported. The distribution of these fatalities by 5-year age groups, as shown in figure 6, is startling. Sixteen percent of those killed are under 10 years of age, while people 45 years of age and over account for 60 percent of all pedestrian fatalities, leaving but 24 percent of the fatalities occurring in the age group 10 to 44 years, inclusive, which includes 57.5 percent of the country's population. The comparison is more striking in the case of narrower groups. Over 25 percent of the persons killed were 65 years of age or more, while that same group represents but 5.4 per-

cent of the population. At the other extreme, fatalities in the age group 15 to 24 years, representing 18.3 percent of the population, were but 3.3 percent of the total pedestrian fatalities.

Many reasons may be advanced for these discrepancies, but, as in other instances, it must be remembered that here, too, there is no record of the number of pedestrians in the various age groups, and without that the relative hazard in the various groups cannot be evaluated. However, it must be recognized that younger children are prone to heedlessness and lack the judgment which should come with maturity. That not only unwitting but deliberate misconduct on their part often leads to tragic consequences is clearly evidenced in the case histories developed in this study.

Various reasons may also be advanced for the high fatality rate among the older pedestrians. First, merely by virtue of their advanced age, injuries and shock of an accident undoubtedly are more apt to result fatally than in the case of younger people. Furthermore, a gradual decline of alertness and slowing of reactions with advancing age may account for accidents younger persons could have avoided. It may also be argued that a sort of personal inertia makes it difficult for elderly people, reared in an age of slower travel, to adjust themselves to the dangers of fast-moving traffic. Can it be, for example, that these older pedestrians, who can see an oncoming car by its headlights at night as well as or even better than in the daytime, do not appreciate that though they are plainly evident in daylight they are invisible from any considerable distance at night? To the extent that this personal inertia influences the action of pedestrians we may expect a reduction in pedestrian accidents as time goes on and those reared in the age of slower travel decrease in number. Regardless of the reasons for the extraordinary fatality rate in the lowest and highest age groups, the fact remains that in the prevention of accidents among people in those particular classifications lies the greatest opportunity for reduction in motor-vehicle fatalities.

The importance of the pedestrian in the fatal accident problem may be seen even more graphically in the following tabulation, which shows the ratio of pedestrian fatalities to all fatalities by various age groups.

Ratio of pedestrian fatalities to total fatalities by age groups

Age group	Pedestrian fatalities as a percentage of total fatalities	Age group	Pedestrian fatalities as a percentage of total fatalities
Under 20 years.....	60.2	45 to 49 years.....	70.8
20 to 24 years.....	10.5	50 to 54 years.....	74.0
25 to 29 years.....	37.5	55 to 59 years.....	73.7
30 to 34 years.....	43.2	60 to 64 years.....	88.2
35 to 39 years.....	44.6	65 and over.....	84.6
40 to 44 years.....	50.8		

This tabulation shows that the high fatality rate in the older age groups is almost entirely due to the pedestrian fatalities. Over three-fourths of all the people 45 years of age or older who were killed in the accidents investigated in this study were pedestrians.

The drivers of the vehicles involved.—Complete data were not available regarding each of the 1,093 drivers involved in the accidents studied. The ages and experience of the drivers for whom this information was known is presented in figure 5, in which the figures obtained in this study were compared with national estimates. The figures on drivers' experience, showing that over 95 percent of the drivers had driven for at least a year is quite significant. Although it can of course be argued that time alone is not a conclusive measure of experience, that even after years of driving a person may not be sufficiently experienced to act properly in a situation confronting him for the first time, the preponderance of operators who have had at least a year's driving seems to indicate rather conclusively that lack of experience plays but a small part in the accident problem.

The age groups used in figure 5 were necessarily broad to permit comparison with the national estimates. More detailed information regarding the ages of the drivers involved in the accidents investigated in this study is presented in table 3.

TABLE 3.—*Distribution of drivers, by age groups*

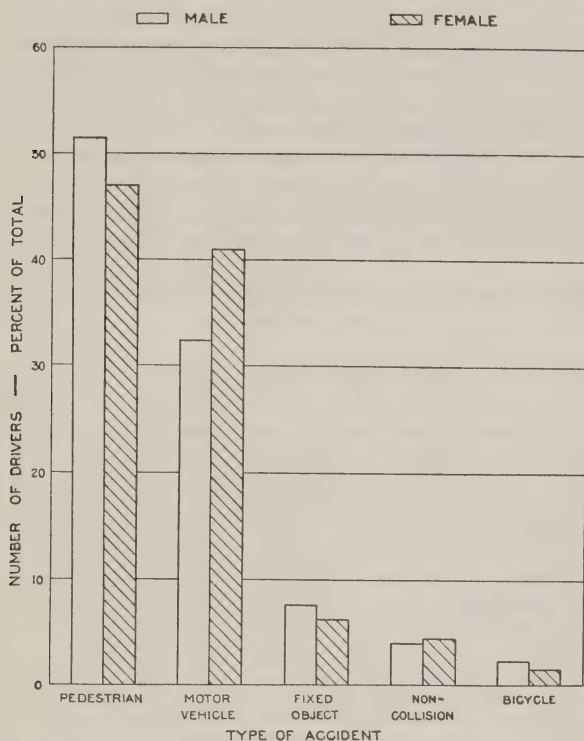
Age group	Drivers involved in fatal accidents		Age group	Drivers involved in fatal accidents	
	Number	Percent		Number	Percent
Under 20 years.....	81	7.8	50 to 54 years.....	37	3.6
20 to 24 years.....	235	22.6	55 to 59 years.....	24	2.3
25 to 29 years.....	182	17.5	60 to 64 years.....	25	2.4
30 to 34 years.....	153	14.7	65 years and over.....	22	2.1
35 to 39 years.....	122	11.7			
40 to 44 years.....	94	9.0	Total.....	1,040	100.0
45 to 49 years.....	65	6.3			

It is of interest that 235, or 22.6 percent, of the drivers were in the age group 20–24 years. The miles driven by the operators in the various age groups are not known. However, it is unreasonable to suppose that the 20–24-year group drives 30 percent more miles than the group next highest in accidents, or 50 percent more than the 30–34-year group, which is third highest in accidents, although those figures represent the respective ratios of accidents occurring in these age groups. With the factor of experience apparently eliminated by the facts brought out in figure 5, it appears that age is a significant factor in the liability of a driver to accidents. Again it must be emphasized that while this thought is based on what appear to be reasonable assumptions, the relative liability cannot be evaluated without a knowledge of the mileage driven by the drivers of various ages.

Relation of driver to owner of vehicle.—The relation between the drivers and owners of vehicles of various types is shown in table 4.

TABLE 4.—*Relation between driver and owner of vehicles involved in fatal accidents*

Driver	Passenger cars		Trucks and tractor trucks		Other	
	Number	Percent	Number	Percent	Number	Percent
Owner.....	489	60.9	31	14.9	15	26.8
Friend of owner.....	206	25.7	15	7.3	2	3.6
Employee of owner.....	33	4.1	138	66.7	35	62.5
Relative of owner.....	18	2.2				
Renter.....	1	.1				
Not known.....	56	7.0	23	11.1	4	7.1
Total.....	803	100.0	207	100.0	56	100.0

FIGURE 7.—*Distribution of male and female drivers by type of accident*

It is to be expected that most of the drivers of trucks were employees of the owners, and also, since the classification "other" includes taxicabs and busses, that the same is true in that classification as well. It is striking, however, to find that 25.7 percent of the passenger vehicles involved in these accidents were driven by friends of the owners. It seems entirely unreasonable to expect that a quarter of all passenger cars are driven by owners' friends; so it appears that these "borrowers" are much more liable to accidents than are the owners. Unfamiliarity with the vehicle is immediately suggested, but a reading of the case histories compiled in the study makes one wonder whether, in addition, these same "borrowers" are not as a class less responsible than are car owners.

Sex of drivers.—It has been stated that but 6.0 percent of the vehicles involved in these accidents were driven by women. Figure 7 shows the distribution of male and female drivers by accident types. Although there were but 66 women involved, the similarity of their distribution by accident types is remarkably close to the distribution of the male drivers. It appears therefore that the type of accident is not a function of the sex of the drivers.

Disciplinary action.—Although the principal purposes of this study were to analyze the causes of accidents and the circumstances under which they occurred, opportunity was offered during the preparation of the case histories to compile the records of the disciplinary action taken by the courts and the motor-vehicle departments.

A review of these case histories creates a very definite impression that the penalties imposed by the courts are seldom in reasonable proportion to the offenses. Criticism in this respect should not be interpreted as implying laxity on the part of the officials. Rather the failure to inflict proper punishment is due to the difficulty of obtaining evidence, admissible in court under the rules of evidence, sufficient to convict and perhaps also to the lack of a criminal code designed to fit present-day motor-vehicle-accident cases. The court action in accidents involving 905 drivers is tabulated in table 5.

TABLE 5.—*Court action in fatal motor-vehicle-accident cases*

Action taken	Cases	
	Number	Percent
No record of any action.....	399	44.1
Cases not prosecuted.....	186	20.6
Cases nolle prossed.....	35	3.9
Cases dismissed.....	95	10.5
Defendant judged not guilty.....	33	3.6
Defendant fined.....	95	10.5
Fine remitted.....	2	.2
Jail sentence less than 1 month.....	1	.1
Jail sentence 1 and under 6 months.....	10	1.1
Jail sentence 6 and under 12 months.....	11	1.2
Jail sentence 1 year or more.....	6	.7
Jail sentence suspended.....	20	2.2
Cases pending.....	12	1.3
Total.....	905	100.0

Of the 905 drivers involved in these fatal accidents, only 28 served time in jail and but 95 paid fines. Over 86 percent were not penalized by the courts in any way.

The action of the motor-vehicle departments of four States from which reports of 614 cases were collected is summarized in table 6. The number of drivers against whom action was taken exceeds the number of cases somewhat, as in certain instances action was taken against more than one driver.

TABLE 6.—*Action of motor-vehicle departments in fatal-accident cases*

Action taken	Drivers	
	Number	Percent
No record of any action.....	57	8.9
Neither suspension nor revocation of license.....	17	2.6
License suspended for—		
Less than 1 month.....	64	10.0
1 and under 3 months.....	146	22.7
3 and under 6 months.....	75	11.7
6 months or more.....	100	15.5
Period not stated.....	70	10.9
License revoked.....	114	17.7
Total.....	643	100.0

With no attempt to judge whether the severity of the penalties imposed was in proportion to the offenses committed, it does seem evident that the motor-vehicle departments, unhampered by the rules of evidence, and actually existing because of the problems of present-day traffic, can at least take the positive action that courts so frequently find impossible. Only 11.5 percent of the drivers escaped the forfeiture of their rights to drive for at least a short period, while the driving privileges of one-third were either suspended for 6 months or more or revoked entirely.

SUMMARY

By a comparison of figures developed from slightly more than half the accidents investigated in this study with similar figures estimated for all fatal accidents occurring throughout the United States in 1936, it was established that the sample is reasonably representative of fatal accidents generally. A limited analysis of various factors, possible of summarization from the detailed reports assembled for this study but not generally available from the usual published reports, indicates very definitely the value of a complete statistical review of the entire 1,715 cases, by means of a tabulating-card analysis. Many significant features concerning the circumstances under which accidents of various types occur undoubtedly would be disclosed. It is also evident that our courts as now constituted cannot deal adequately with the drivers involved in fatal accidents. The motor-vehicle departments, although restricted as to punitive measures, can and do take more positive action toward the control of the drivers than do the courts.

THE CAUSES OF ACCIDENTS

The primary purpose of this research was to study in detail all of the conditions surrounding each accident in an effort to analyze the causes. Such an investigation was limited to the reports available in the motor-vehicle departments; and analysis of the actual accidents was of course impossible. Therefore the causes assigned by the various investigators depended upon the material available regarding the circumstances of the accidents, and on their judgment as to the reliability of the often conflicting stories of the individuals

involved. No effort was made to assign any one violation of the law or of good driving practice as the principal cause. Rather, any act or condition that may logically have contributed to the occurrence of the accident was recorded as a cause, with no attempt to assign one as the most significant.

This analysis showed that although many accidents may be attributed legally or morally to but one negligent or faulty action on the part of a person involved, by far the majority were the result of a combination of causes, the elimination of any one of which would have prevented the accident. For the 892 accidents for which the reports were reviewed, 2,524 causes were tabulated, an average of nearly 3 per accident. The distribution of these causes is shown in the following tabulation:

Factor:	Number of occurrences
Speed excessive for conditions-----	636
Pedestrian's condition-----	417
Driver's negligence-----	361
Poor visibility-----	302
Temporary hazards in roadway-----	232
Pedestrian's faulty action-----	178
Driver's faulty action-----	155
Driver's condition-----	152
Faulty condition of motor vehicle-----	52
Faulty action of driver of vehicle other than a motor vehicle-----	21
Passenger's faulty action-----	16
Other factors-----	2
Total-----	2,524

In considering these causes, certain factors must be borne in mind. First, the causes were assigned by the individual investigators, based on their interpretation of the various reports for each accident. Second, some of the causes are difficult to differentiate one from another, as for instance excessive speed and negligence. Third, in many cases the particular action became the cause of an accident only because of the circumstances under which it occurred. Comments on particular causes appear below.

Speed excessive for conditions.—This item appears most frequently in the list of accident causes. That a great many accidents are caused by high speed is immediately suggested. Yet in reading the reports, it becomes apparent that in most cases the speed was not particularly high, but was too high for the particular conditions obtaining at the time of the accident. Some accidents were reported in which it is evident that even 10 to 15 miles per hour was an excessive speed for the conditions. To carry the factor of speed in accidents to an absurd conclusion, it may be argued that accidents can occur only as a result of excessive speed, for without motion of one body relative to another there could be no collision. Yet the fact remains that many accidents occur at relatively low speeds that are considered safe by the operator but are too high for conditions that should be recognized as hazardous.

Pedestrian's condition and pedestrian's faulty action.—Under pedestrian's condition are included intoxication, and also impairment of the use of faculties by old age or physical defects. Often the faulty action is inspired by the pedestrian's condition. The two are difficult to separate, but the distinction was made, in the best judgment of investigators, wherever possible. In many cases, both factors entered.

Driver's negligence and driver's faulty action.—As in the case of excessive speed, negligence may be construed as entering into every accident. Under the definition of negligence—"failure to exercise the care that the circumstances justly demand"¹—nearly every accident must be the result of someone's negligence. Excessive speed, for example, is the failure to exercise due care in that respect. It is similarly difficult to differentiate in certain cases between a negligent driver and one who acts in a faulty manner. As an illustration of the demarcation between the two, consider a driver crossing railroad tracks unprotected by a watchman, but with an adequate warning device. A collision resulting from the failure of the driver to heed the warning would be considered as arising from negligence. Yet, had the driver stopped, as did one who was fatally injured in a grade-crossing accident investigated in this study, and after assuring himself that his way was clear, driven directly into the path of an approaching train, his action, under the definition used in this study, would be faulty and not negligent. Again, the differentiation is based on the best judgment of the investigator.

Poor visibility.—Poor visibility must be linked with excessive speed before it can be a cause of an accident. Although lack of visibility in itself cannot be a factor, a sudden change in the visibility may make excessive a speed that immediately before was reasonable. Abundant evidence of this effect will be found in the accident reports that follow. A driver may be operating at a speed that is reasonable under the conditions he has been encountering, involving perhaps the meeting of a series of cars with properly focused lights, when suddenly he is confronted by a car with brilliant out-of-focus lights. His reasonable speed becomes excessive for the condition of temporary blindness. In cases of accidents occurring under such circumstances, both poor visibility and excessive speed are listed as causes.

Temporary hazards in the roadway.—This title is given such conditions as children playing on or alongside the pavement, or pedestrians the driver can see and should recognize as a potential accident source. Persons darting unexpectedly into or directly in front of a vehicle are not included in this category. While the failure to use due caution in view of a temporary hazard of this nature is construed as negligence on the part of the driver, an accident often occurs, even with the exercise of reasonable caution by the driver, as in the case of a pedestrian, who was seen by the driver, and who apparently saw the vehicle yet walked directly into the path of the vehicle and was killed. As in the case of poor visibility, a temporary hazard cannot in itself be the cause of an accident. It must be coupled with negligence or faulty action on someone's part to produce an accident.

INDIVIDUAL CASE HISTORIES

It is believed that a careful reading of a large number of individual case histories will give a much clearer realization of the accident problem in present-day highway traffic than any impersonal statistical classification. A critical study of the entire collection yields a number of general but rather clear-cut impressions.

¹ Webster.

There follow approximately 100 cases, selected and roughly classified to illustrate the various causes of accidents, and as well the manner in which circumstances combine to cause accidents of various types. It is believed that the conclusions drawn from the entire sample will be apparent in these few cases. In considering these cases, it should be remembered that they were selected to illustrate certain accident types and causes, and do not appear in the same proportion in which the types and causes appear in the entire sample. Further, it must be remembered that causes are assigned as a result of the judgment of the investigator. The reader may deduce factors not listed by the investigator, or disagree with some listed, especially in the cases of accidents occurring from a multiplicity of causes. It is felt, however, that the factors have been logically assigned.

ACCIDENTS RESULTING FROM A SINGLE CAUSE

A group of case histories has been selected, in which the accidents have been attributed—in this study—to a single cause, which is considered proximate and sufficient. Consideration of the cases in detail will indicate how difficult and uncertain becomes the assignment of such a cause to the complete exclusion of all other causes. Accidents apparently susceptible to such classification are not numerous; usually several causes are more or less clearly indicated. The reports here presented, classified by types, will serve to illustrate the judgment used in the analysis.

Speed excessive for conditions.—Comment already has been made that speed excessive for conditions need not necessarily be a particularly high speed. This fact will be brought out in these and other reports. Another significant fact, which is probably to be expected and which reading of the reports will clearly reveal, is the frequent understatement of the driver and often his passengers regarding the speed of their own vehicle. While these reports are of interest to show the various conditions under which excessive speed is dangerous—often conditions which the drivers do not appreciate as being hazardous—it must be remembered that the data are qualitative only. Conclusions as to what are reasonable speeds under various conditions cannot be drawn. The following accident was caused by high speed; in this case not a speed too high for unusual conditions such as poor visibility or slippery pavement, but a speed probably too high for any conditions outside a race track. A speed of 75 miles an hour around an curve marked with "Slow" signs can be nothing but excessive.

Case 1: B was operating south on X road, a through route, at a speed estimated by police to have been about 75 miles an hour, when he lost control of his car on an S curve. B was thrown out. He sustained a broken neck and other injuries. He died.

The accident occurred at 6:30 p. m. in November, in clear weather. It was dusk. The road surface was dry and in good condition. There were signs warning motorists to drive slowly.

Fifty miles an hour might not have been too fast for the conditions under which the previous accident occurred, but it evidently was too fast for the slippery pavement in the next case cited. It might be considered that the slippery pavement was a contributory

cause, but in this study such conditions were not so regarded when they were continuing and usual to that particular time and locality. A stretch of pavement which was unexpectedly slippery would have been regarded as contributing to the accident. But when driving on a wet pavement, a slippery condition is normal, or at least to be expected at any time, and speed must be reduced accordingly.

Case 2: B was driving east at 50 miles an hour on a wet pavement when his right wheels went off the road. The car began to skid, crossed the road, skidded sideways along the north shoulder, finally striking a tree. The center of the left side of the car struck the tree. B was killed and a passenger injured.

The accident occurred at 4:30 p. m. in August, in a rural district on a through route with a concrete surface 20 feet wide. The weather was clear.

Police concluded that B had been driving too fast for conditions and was responsible for the accident. There was no police or court action.

In the next case an unusual individual who admits all the blame was quite evidently driving too fast for a presumably visible condition—an intersection.

Case 3: B assumed all blame for the accident in which his car struck C's car at the intersection of two secondary routes. Two passengers in B's car were fatally injured.

The accident occurred at 4 p. m. in August. The weather was clear and the road surface dry. There were no stop signs on either road.

B, who was driving north on Y road, struck the left rear of C's car, which was west-bound on X road. B said that C was nearly across the intersection when he struck him. He offered to pay C for all damages.

Police agreed that B was responsible. There was no police or court action.

Speed too fast for the road alinement was evidently responsible for the following accident. It seems that the curve should have been expected, as the road wound around a hill.

Case 4: According to the sheriff's report, B was going east at 60 miles an hour when he attempted to traverse a curve which would take him around a hill. He was unable to stay on his own side of the road at the speed, and struck C's west-bound truck head-on. B was killed.

The accident occurred on a secondary road in a rural district at 3 p. m. in September. The road curved to B's right. The weather was clear, the road surface dry.

No police or court action was taken.

In the next case an icy road, made more slippery by a rainstorm, provided conditions under which the speeds of all the vehicles involved were undoubtedly too fast. One driver was no more responsible than another, and under the circumstances the accident could only be called unavoidable. Excessive speed, however, must be recorded as the cause.

Case 5: B's bus skidded on a curve during a rainstorm, colliding first with a truck operated by C and then with one operated by D. C, aged 50, was killed when the cab of his truck was struck by B's bus.

The accident occurred in daylight between 7:30 and 8 a. m. on a curve on a through route. The pavement was icy.

According to the investigator's report, B was driving west and rounding a slight curve to the north, when he started to skid. C, driving in the opposite direction, saw him, and applied his brakes, thereby causing his own car to skid over to the north, into B's path, where it was struck. C slid onto the embankment at the north side of the highway, and then swerved back to the south, stopping off the road.

D's vehicle, traveling in back of C, swerved into a fence at the south side of the road to avoid the other two vehicles, but rebounded back onto the highway, where it was struck by B's bus, which then crashed into an embankment at the north side of the road, stopping 97 steps from where it first struck C. It was believed that none of the drivers was going at an excessive speed.

Police arrested B. The coroner reported the accident as unavoidable, and exonerated all the drivers. In court, B was charged with involuntary manslaughter, but the case was dismissed when the accident was found unavoidable. The motor-vehicle department took no action against either of the two surviving drivers.

A freezing rain evidently made 10 to 20 miles per hour excessive in the following case. The fatality seems to be an unfortunate result of an occurrence that might have been a relatively minor accident.

Case 6: B, who since 1927 had twice had his license suspended for motor-vehicle-law violations, lost control of his car after it had skidded on the icy surface of X road at 1:50 a. m. in January. C, a 59-year-old male passenger, was killed.

X road is 20 feet wide, with 4-foot shoulders. There are strips of grass on both sides of the road beyond the shoulders. On one side this strip is 5 feet wide and on the other side it is 4 feet wide. It was raining, B testified, and the surface of the road froze over. The locality where the accident occurred is well lighted by street lights.

B said he, C, and another man had driven a young woman from the city to her home in a nearby town. They had stopped for coffee in another town at 1:10 a. m. He said that the roads had become icy just after he had left the city. He had skidded several times, he said, but had managed to right the car, since he was driving carefully, knowing the condition of the roads. B told police his speed had varied from 10 to 20 miles an hour.

Suddenly his car skidded, crossed the road, went off the road to the left, and struck a telephone pole a glancing blow, after which it went into a ditch and crashed into a tree. C was sitting alone in the back seat. The evidence indicates that he struck his head on the front seat when the impact threw him forward. The two in the front seat were not injured.

At a motor-vehicle department hearing, the referee found B to be at fault and revoked his license. B appealed and the revocation was rescinded.

Speed appears to have been the only cause of the next accident. The story is typical of many accidents resulting from a failure of the driver to slow down sufficiently in the face of conditions he must have recognized as hazardous.

Case 7: X road, running north, joins Y highway, running east and west. X road is divided at the intersection by an oval island with Y highway passing along the north side. A short distance east of the intersection, Y avenue curves to the north.

B's car was found, bottom up, on the west corner of the intersection at 3 a. m. in January. B, C, and D, the three occupants of the car, were there. C had been killed.

B claimed that the accident occurred at 11:30 p. m. The weather was misty; the surface of the level 24-foot road, wet and freezing. Being in a thickly settled residential district, street lights provided good illumination; and B's headlights were on high beam.

B and D left D's home at 10:45 p. m. to visit a man B had met three or four times. A party was going on at the place visited and the two remained, although they had not been invited. Liquor was served, but the hosts supported their assertion that they had nothing to drink. After leaving the party they stopped nowhere else, they said. When they left they brought C, whom neither had known before, with them. No evidence of liquor was found on B, C, or D, at 3 a. m.

He had been driving west, B said, at 30 to 35 miles an hour. His car was found, heading west, about 10 feet off the south side of Y highway, and about 20 feet west of the west lane leading out of X road. Investigators believed that, for some unknown reason, the car went into a skid on the curve. There were no marks on the road, but the shoulder was torn up. A post on the west corner of X road was marked, and a tree near the car bore a mark about 4 feet from the ground.

The motor-vehicle department concluded that B's speed had been too fast for the conditions of travel and that he was seriously at fault. His license was revoked 2 months after the accident. B was given permission to renew his license 6 months later. Twice in 1930, and once in 1932, he had been arrested and fined for speeding.

In an obviously deliberate attempt to obtain the top speed from his car, the next driver at least succeeded in his purpose of giving his passengers a ride they never will forget. The responsibility for this accident seems to rest entirely on the driver's desire for speed.

Case 8: According to the story D and E told police, B was driving north on Y Avenue at 1:20 p. m. in September when he stopped to pick them up. He then told the two men he would give them a ride they would not forget. He accelerated the car until it was traveling at 60 or 70 miles an hour.

A witness who was driving north also, testified that when he heard the squealing of brakes he looked in his rear-view mirror and saw B's car swerving toward him at high speed; he drove off the road

to let him pass. B attempted to pass another car, sideswiped it, swung in front of it, then cut across to the left side of the road where he crashed into a tree. B was killed. His two passengers were removed to a hospital.

Part of a bottle of whisky was found in the car, but police reported that there was no definite evidence that B was intoxicated. C's car, which was sideswiped by B, stopped within 12 feet. After sideswiping the car B traveled 179 feet before he struck the tree. There were no south-bound cars at the time.

The accident occurred on a secondary road with a 23-foot bituminous surface. The weather was clear and the road surface dry.

There was no arrest. The motor-vehicle department concluded that B's death was a result of his own carelessness and that C was in no way at fault.

Although the speedometer reading of 88 miles per hour after the accident is meaningless, there is plenty of evidence in the following case that B was traveling at a dangerously high speed. Perhaps under normal conditions B was a model driver; but his temperament—excitable, nervous, or irresponsible—made him a highly dangerous driver under the stress of these unusual circumstances. This and similar cases raise the question of whether it is possible to detect such unfitness prior to granting an applicant a driver's license.

Case 9: While attempting to rush C, his 2-year-old boy, to the hospital B lost control of his car and crashed into a tree at the right side of the road. B, his wife, D, and C were killed. B's two other children were critically injured.

The accident occurred at 5 p. m. in October. The road was surfaced with concrete, with dirt shoulders. The weather was clear and the road surface dry.

According to a newspaper story written at the time, one of the surviving children testified that previous to this accident C had been jerked from the car when the door opened. He had been pulling at the handle, she said. B jammed on his brakes, put the injured child in the car, and started for the hospital at high speed.

A police investigator reported that the car traveled north on the left side of X road. After passing several cars, B swerved to the right to avoid oncoming traffic, struck the dirt shoulder on that side and lost control, finally striking a tree. A newspaper story stated that B was trying to pass a car on the right when he struck a tree and plunged into a ditch.

B was speeding and waving his handkerchief when he lost control of the car. The inspector said the speedometer read 88 miles an hour after the crash.

Negligence.—Negligence is difficult to isolate as a single accident cause, since in nearly every case the action or actions which led to the accident arose through negligence on the part of some individual involved. The following group of reports will show the type of accidents attributed to negligence.

Negligence in failing to take the necessary precaution before crossing railroad tracks was responsible for the two accidents next de-

scribed. In both cases the hazard was plainly visible. In the first case, with a clear view in all directions, the driver certainly was negligent either in failing to see the train or, as the police thought possible, in engaging in a race which resulted in a tie. In the second case, it is easy to reconstruct possible circumstances leading to the accident. At 3:30 on a February afternoon, with windows closed because of the cold, and traveling his regular route where he had crossed the railroad time and again without accident, the driver suddenly discovered the train, its sound deadened by the covering of snow on the ground and between the rails, almost upon him. Whether he tried to back off, or tried to stop and slid onto the crossing, or attempted to beat the train, is not significant. He found himself in a position, due to his failure to assure himself that the crossing was clear, from which escape was impossible.

These circumstances are purely imaginary but entirely reasonable, for how many drivers habitually cross railroads without taking this necessary precaution? This driver's death can only be attributed to negligence, yet a grade separation would have saved his life.

Case 10: B was driving south on a secondary road when, at a railroad crossing, his car was struck by a west-bound train.

The accident occurred at 9:25 a. m. in June in a rural district. There is a clear view in all directions as one approaches the crossing. The crossing was posted with a warning sign.

Police concluded that either B did not see the train or was trying to beat it. The car was hurled 126 feet. It came to rest south of the tracks. B was thrown into a ditch. There was no police or court action.

Case 11: B, a 24-year-old truck driver, was killed when his car was struck by a train at a railroad crossing.

The accident occurred at 3:27 p. m. in February, at the intersection of railroad double-tracks with a 16-foot bituminous road. The intersection had a plank surface. The road surface was smoothly covered with snow.

The crossing is in a sparsely settled, rural district. From a point within 60 feet of the crossing, there is a clear, unobstructed view of the railroad tracks for 2,000 feet. A whistling post is located 1,328 feet north of it, and a whistling disk sign 223 feet north. There is a cross-arm sign on the southerly side of the road, 12 feet west of the westerly rail of the south-bound tracks.

According to witnesses, B, alone in his laundry truck, was traveling east, when the left side of his truck was struck by a south-bound passenger train, in charge of C, engineer. The truck was carried 2,096 feet by the train before stopping.

Four witnesses claimed that the usual crossing signals had been sounded by C, an eyewitness stating that the whistle on the engine was still blowing at the time of the impact. One of the witnesses said that the truck was on the track and that B was trying to back it off. Two other witnesses stated that B drove onto the tracks just before the train reached the crossing. C claimed that he was within 50 or 60 feet of the crossing, blowing the whistle, when B's truck appeared at a speed he estimated at 30 miles an hour.

B's regular route led over the crossing. He had been employed by the laundry company for some time.

The motor-vehicle department reported that B was solely at fault, and that there had been no negligent act on the part of any other person or persons.

Negligent action is very often evident at intersections. Failure to grant the right-of-way, expecting the other driver to stop, or completely ignoring the hazard are common occurrences. The four following case histories describe the results of negligence in these respects. In the first case, the drivers saw one another, and each expected the other to stop. Each evidently placed his expectation as to the other's action ahead of the necessity for caution on his own part. The accident is attributed to negligence on the part of both drivers.

Case 12: B, north-bound, and C, east-bound, collided at a rural intersection. Each driver admitted that he saw the other, and each said that he expected the other to stop. B's wife and C's wife were killed. B's daughter was injured.

The accident occurred at 10:15 p. m. in May. There were no obstructions to view at the intersection, but it was dark and there were no street lights. The weather was clear and the road surface dry.

The two cars crashed into a fence at the northeast corner, coming to a stop there. The entire front end and the left front fender of B's car and the right side and front of C's car were badly damaged.

The police card indicates that B did not have the right-of-way. There was no arrest and no court action.

In the next case B, rather than take the time to wait for a clear road, attempted to squeeze through a lane of traffic at a break he thought was sufficient to allow time for crossing. C, whether through lack of judgment or an excess of determination, would not give ground. Both drivers were negligent in putting haste ahead of safety. Revocation of both drivers' licenses seems entirely appropriate. There is no record of any court action.

Case 13: B's truck collided with C's car at the junction of a parkway and a side road. As the result of this accident, D, a 3-year-old girl in C's car, died from a fractured skull.

The collision occurred at 2:15 p. m. in August, on a bituminous-surfaced parkway. The weather was clear and the road surface dry. A grass park strip divides the parkway into two one-way roadways. On the west side of the parkway a side road enters from the southwest, making an acute angle with the parkway.

C was driving south on the inside lane of the parkway, near the grassplot, moving with the traffic, which was going about 25 miles an hour. B was driving northeasterly along the road coming into the parkway. While he said that he was going only 8 miles an hour, C and a man in the car following hers claimed that the truck was traveling much faster than that speed. This witness said he thought it was traveling too fast to enter the intersection.

B claimed he saw a break in the traffic, and started across the first lane of the parkway, thinking he had plenty of time to make it. C

said she saw the truck approach and then turn to the left, so that she thought B intended to pass behind her car. She continued on, she stated, when B suddenly turned to the right, trying to pass before her. The front end of her car struck the truck's right rear. D, one of two children in the rear seat, received fatal injuries. The pavement showed no brake marks from either vehicle.

The motor-vehicle department concluded that both cars were going too fast for conditions. The licenses of both B and C were revoked.

B had been fined for speeding in 1935. In that year, also, he had been involved in a fatal accident for which he was not held at fault.

Many drivers enter an intersection on an amber signal just before the light turns green, and many more rush ahead immediately on the appearance of the green light, ignoring pedestrians already on the cross walk. Either act is a failure to exercise due caution and therefore constitutes a negligent action. A 6-month suspension of his right to drive was B's punishment in the following case, and no police action was taken.

Case 14: B's car struck two pedestrians at an intersection of city streets. C, a 60-year-old woman, died as a result of the collision. D, the other pedestrian, was injured. D claimed that B went through a red light.

The accident occurred at 11:45 p. m. in August. The weather was clear, the road surface dry. It was dark. The intersection was controlled by a stop-and-go signal.

B claimed that he was operating west on X street between 20 and 25 miles an hour, accompanied by one passenger. There were no other cars at the Y street intersection, he stated, and the light turned green, so he continued across without stopping. Suddenly, he said, he saw two pedestrians before him, crossing the intersection from the north, against the traffic light. His car struck them, knocking them to the ground.

D did not corroborate B's statements. This pedestrian said that the light was red for X street, and that a car was stopped there waiting for it to change. C and D looked both ways, D claimed, and, not seeing B's car coming, started across the east cross walk and passed the waiting car. D also stated that other cars were waiting at the intersection.

As soon as they had gone by the car, D said, they were struck by B's car, which was passing to the right of the waiting car and was going against the red light. D, who did not lose consciousness when he was knocked down, said he called to B and asked him if he had seen the red light, but B refused to answer. The car stopped near the center of the intersection.

Police believed D's account of the accident. The coroner reported that B's careless driving was responsible for C's death. The motor-vehicle department suspended B's license for 6 months.

Conflicting stories from the individuals involved, and no disinterested witnesses, make it nearly impossible to fix the responsibility for the next accident. Yet it resulted from no reason but negligence on the part of one or both of the drivers. It is not unusual in these

reports to read of fatalities occurring several weeks after the accidents in which the injuries were inflicted. This suggests the need of requiring a thorough physical examination of all persons injured, however slightly, in motor-vehicle accidents.

Case 15: Cars operated by B and C collided at the intersection of X street and Y avenue at 3:10 p. m. in October. D, a 19-year-old girl passenger in B's car, received a bump on her arm and possibly an internal injury. She testified at a hearing held a month and a half after the accident and subsequently died. The motor-vehicle inspector stated that she did not die as a result of the accident.

The collision occurred on a clear day when the road surface was dry. X street is a "stop" street. Y avenue is very wide.

B testified that she was driving her car south in the middle of X street and had stopped at Y avenue. She looked in both directions, she said, and, seeing nothing coming, proceeded across the intersection at 10 miles an hour.

C said he was driving east on Y avenue, keeping on the south side of the street. He was traveling about 7 or 8 miles an hour, he claimed, having just made a stop, and saw B's car when it was 75 feet away. Thinking it would stop for Y avenue, he continued on, but B ran through the stop sign. The left front of his car struck the right front of B's car.

Police arrested C. In court he was found not guilty of a charge of assault and battery by auto, but was fined \$12.50 and costs for reckless driving. C paid B \$26.75 for damages to her car. The motor-vehicle inspector said he believed that B may have driven through the stop sign as C said she did, and that C had been harshly dealt with.

The three following accidents are attributed to negligence. The actions resulting in the accidents are distinctly different, and not necessarily typical of a great many accidents, yet they emphasize the possible disastrous results of careless or hasty action.

Permitting coasting on a hill, without prohibiting vehicular traffic that might endanger coasters was undoubtedly merely carelessness on the part of someone in authority. It is reasonable, therefore, to assume contributory negligence on the part of the city in the case described below. The children certainly were not at fault, and the driver exercised more than reasonable caution.

Case 16: C, a 13-year-old boy, and two companions, coasting on a sled, crashed into B's truck-trailer at the foot of a hill. C was killed; his companions escaped without injury.

The accident occurred where Y avenue enters X street, at 4:15 p. m. in February. The weather was clear. The bituminous-macadam road was covered with rutted ice and snow. While the intersection had been sanded a day or two before the accident, snow had covered the sand, melted, and then frozen over it. The city permitted coasting on Y avenue and had intended to place guards at the intersection at 6 p. m.

B testified that he had stopped his tractor and tank-trailer before turning left into X street. Knowing that there was coasting on Y avenue, he said he stopped again before passing Y avenue, which intersected on his left, then proceeded down X street. Several sleds

came by, turned left into X street, passing B's truck on the left. Not seeing any more sleds, B stated, he started up again. However, a sled carrying three boys came downhill very fast, did not make the turn into X street, and ran into the left rear wheel of the tractor. B claimed that a bank of snow along the side of the road hid the sled from his view.

Two of the boys fell off and were uninjured, B testified, but C landed in front of the wheel and apparently was pushed along by it. The wheel did not pass over him, and B said he felt no bump. A witness stated that B's speed was 3 or 4 miles an hour and that he stopped very quickly. After the accident the intersection was sanded.

The court exonerated B and the motor-vehicle department returned his license a month later. B's license had been suspended twice in previous years on minor charges.

The case history below tells of an unfortunate case in which an entirely innocent occupant of a parked car became the victim of another's negligence.

Case 17: A's car was headed in toward the north curb, where he was cranking it, unaware that it was in reverse gear. When the motor started the car backed out into the street, minus its operator, traveled in a curving line eastward back toward the north curb, where it backed into the center of the left side of a parked car. A woman seated in the parked car received injuries from which she later died. There was no operator in the second car at the time.

The accident occurred at 4 o'clock in the afternoon in the city during a rainstorm. Police arrested A. There was no court action. The motor-vehicle department suspended A's license.

Perhaps it is not a natural move to stop a car before attempting to eject a bee. Yet the failure to do so in the case described below cost a life. The hasty action must be considered negligence. A driver may not allow his attention to be diverted from his driving, even for an instant, without the possibility of serious consequences.

Case 18: C, an 18-year-old girl, was killed when B's car struck a telephone pole after B had lost control of it on X road. D, another woman passenger, and C were sitting on the seat with B.

The accident occurred at 3:50 p. m. in June on a bituminous road, 25 feet wide. There is a 14-foot grassplot on the south side of the road. The weather was clear and the road surface dry.

B testified that he was driving east on X road about 25 to 30 miles an hour when C called his attention to a bee that had come in through the open windshield and alighted on his chest. He was attempting to get it out of the car when he lost control, B said. The car went off the south side of the road, striking a pole just beyond the pavement.

The center of the radiator struck the pole, the impact forcing it back against the fan. The steering wheel was broken, but, investigators reported, there was no other damage to the car; all the glass was intact. Both passengers were thrown against the instrument board. C died at 5:10 p. m. that day. D claimed she did not re-

member anything about the accident. B told police he took C and D out of the car and laid them on the grass. Then he fainted, he said. The party was on the way to a nearby beach.

Police arrested B on a charge of operating so as to endanger life. In court B pleaded not guilty to this charge, but was convicted. He was fined \$50 and placed on probation until January 8, 1937. He pleaded not guilty to the charge of operating without a license. He was found guilty, but the case was merely filed on this count.

The referee at a motor-vehicle-department hearing concluded B was at fault for not stopping his car before he attempted to get rid of the bee. His right to drive was suspended, and at the hearing held a month after the accident it was ruled that his right to drive should remain suspended. Five months after the accident a new license was to be issued to him.

Pedestrian's faulty action.—Pedestrian fatalities contribute to the total deaths in motor-vehicle accidents to a greater degree than all other types combined, and in many of these accidents the fault lies entirely with the pedestrian. One of the most common types, confined by the nature of the conditions largely to cities, is the result of the pedestrian darting suddenly from between parked cars into the side of or directly into the path of a moving vehicle. Often such accidents occur in a rain or snow storm, when visibility is poor. In most of these cases, poor visibility is not considered as a contributing factor, for it is generally apparent that the pedestrian, in his haste to seek cover, or to protect his face from the driving snow or rain, omits entirely the precautionary measures he would take in more favorable weather. Although visibility under these conditions might be too low for high-speed driving on the open highway, it can hardly be a factor when the distances concerned are but a few feet. Several typical reports of accidents of this type follow:

Perhaps because of the misty day, the pedestrian in the case described below attempted to run across a street carrying traffic moving in both directions, and ran to his death. His faulty action was entirely responsible.

Case 19: B testified that while he was traveling south on X avenue, through the Y street intersection, C, a 50-year-old male pedestrian, ran out from between cars in the north-bound line into the left front fender of B's car, and was thrown to the road. C died as the result.

The accident occurred at 5:45 p. m. in August, at the intersection of X avenue and Y street, in a thickly settled residential district. The weather was misty; the road surface wet. The roadway was of concrete and was 38 feet wide. Traffic was heavy in both directions.

B stated that there were no dents in his left front fender, but that two clear imprints of hands were made in the dust on it by C when he put out his hands to ward off the car. All the witnesses claimed that C met his death through carelessness in running through lines of traffic, from the southeast corner of the intersection to the northwest corner, where a bus had stopped. None of the witnesses thought B's car struck C, but rather that C had run into it and put out his hands, and that he had been thrown backwards, falling flat on his back. The inspector declared that he thought B in no way to blame.

The motor-vehicle department concluded that the accident was caused by C's negligence, and that B was not at fault. B's license was suspended, for office records, and returned to him the same day.

A 60-year old woman was killed by stepping into the side of a nearly stationary taxi. It may be that she did not realize the street was a one-way street, and had looked to her left before stepping from the curb, yet the fault can be none but her own. It is of interest and, perhaps, significant that she was struck by the door handle. Perhaps had she missed the door handle, she would have been killed by the rear fender, or some other part of the body, yet the frequency of injuries inflicted by door handles has led to recent attempts to remove their hazard by bending their ends inward, or by placing them in recesses.

Case 20: At 10:20 o'clock in the morning in January, A, a 60-year-old woman, stepped from between parked cars on a one-way business street in a large city and into the left side of a taxi moving about 3 miles an hour toward the east. The weather was clear.

She fell to the ground after apparently being struck by the handle of the left rear door. B was unaware of the accident, but stopped immediately when someone shouted to him. B drove the victim to the hospital, where she refused treatment. He then drove her home. Two days later she died at the hospital.

Cars were parked on both sides of the street where the fatality occurred. There were two lanes of moving traffic with B driving in the left lane.

A warrant for manslaughter and operating so as to endanger life was denied by the court. The motor-vehicle department inspector found no serious fault on B's part.

The next case is one of the same type but somewhat unusual in that it occurred in a rural area rather than in a city.

Case 21: B testified that he struck and killed C, a 49-year-old male pedestrian after he had stepped into his path from between two cars parked on the right.

The accident occurred on a State highway at 9:20 p. m. in October. The weather was clear and the road surface dry. B claimed he was operating his one-half ton truck north on X road at 27 miles an hour. When he reached the middle of a block, he said, he noticed three cars parked on the east side of the road. When the front of his truck was about opposite the rear of the first car, C walked out from in front of it, B told investigators. B said he applied his brakes, but could not avoid striking C.

B, who said he had been driving about 4 feet left of the parked car, claimed that he stopped within 8 feet after striking the pedestrian. B claimed he did not have a chance to pass either right or left of C. Two children confirmed B's story that C walked from between the parked cars. They said B was driving slowly.

The district attorney reported that no criminal action or proceedings were pending against B. The motor-vehicle department sus-

pending his license, but later returned it, pending a final hearing. Two months after the accident, following a hearing, it was permanently returned to him.

A similar accident, with a bus as the screen from which the pedestrian appeared, is described next. An unusual feature is the age of the pedestrian. Usually they are either much older or younger.

Case 22: C, a 37-year-old pedestrian, who, according to B, ran into the road from behind a parked bus, was struck and killed by B's car.

The accident occurred at 4:30 in the afternoon in July. The weather was clear and the road surface dry. B testified that he had about a 4-ton load on his 6-ton truck at the time. He was driving south on route X, he said, at about 25 miles an hour, when he noticed a bus parked on the east side of the road, headed north, in front of a restaurant.

When C ran out from behind the bus, B applied his brakes and swerved right, he said, but C became confused and kept running. He was thrown to the pavement by the left front fender and run over by the wheels. He was crushed and died instantly. Two boys were riding in the seat with B.

Calling the death accidental, the coroner held that B was in no way to blame. The district attorney reported that criminal proceedings were neither pending nor contemplated against him. A month after the accident, the motor-vehicle department returned B's license, pending a hearing. At a hearing, 3 months later, held after the coroner's and the district attorney's letters had been received, B's license was permanently returned to him.

The 5-year-old boy killed in the following accident was quite evidently solely responsible for his own death, yet the judgment of faulty action must be tempered by the thought that at his age he must possess but a small portion of the judgment attributed to an adult. The driver certainly cannot be blamed, so the blame must rest upon the child, yet the conditions which permit or even necessitate the constant presence of children near vehicular traffic are equally responsible.

Case 23: A 5-year-old boy was run over and killed at 1:40 o'clock on a May afternoon by a truck which had just crossed X avenue from Blank street into Y street. There were no witnesses.

The accident occurred on a business street in clear weather and there were no obstructions, although a large wooden box on a pole on the south side near the spot where the boy, presumably, had left the curb might have obscured the driver's view of the boy when he was on the sidewalk.

According to the story of the driver, who was proceeding west, he got a glimpse of the child but thought he was going to run behind the truck. The truck was 20 feet from the cross walk when its left rear wheel ran over the child. The driver claimed that on feeling a jolt he stopped the car and found the body about 7 feet behind the left rear wheel. He had been in second gear, moving about 7 miles an hour, he said. He took the child to a hospital, where he was pronounced dead.

The court found the driver not guilty of operating a motor vehicle so as to endanger life. The charge of manslaughter was dismissed, no probable cause being found. The motor-vehicle department could find no evidence of speed or improper operation.

The children involved in this next accident were not pedestrians in the sense that they were walking to a destination, yet the death is classified as a pedestrian fatality since they were not occupants of a vehicle of any sort. A most deliberate faulty action led to this accident, and one would expect better judgment of an 8-year-old child. Perhaps the conditions which permitted or necessitated his playing alongside the road may be considered as having contributed equally with the child's lack of judgment.

Case 24: After C, an 8-year-old boy, had tied one end of a rope around him, and another child had done the same with the other end, they stretched it across the path of a moving tractor-truck-semi-trailer combination. B, the truck driver, said they drew the rope taut just as he was about to pass them. When the truck struck the rope, C was thrown under the wheels of the trailer and crushed to death. The other child was not injured.

All the information on this case was obtained from B's affidavit. B said he stopped as soon as possible. It was dusk, at 6:30 in August, when the accident occurred. The weather was clear.

The coroner and the district attorney reported that no criminal charges were pending or contemplated against B. The motor-vehicle department suspended his license, but returned it to him 2 months after the accident, pending a hearing. A month later, after the coroner's and the district attorney's reports had been received and a hearing had been held, B's license was permanently returned to him.

In 1935, B had been involved in a collision with another car.

Children stealing rides are frequently responsible for their own injury or death. The following case describes how a driver took far more precaution than reasonably could be expected, yet due to the most flagrant disregard of their own safety on the part of the three boys, he became involved in a fatal accident.

Case 25: While attempting to steal a ride on B's truck, C, an 11-year-old boy, fell under the left rear wheel and was killed.

The accident occurred at 3:55 p. m. in October. The weather was clear, and the road surface dry. B testified that he was driving west upgrade, at about 10 miles an hour, when he saw three boys at the south side of the road. His 1½-ton truck was piled high with boxes at the time, he said.

As he approached the boys, B said, two of them ran to the north side of the road in front of the truck and the third ran in back of it. Suspecting they were going to jump on the truck, he stopped to order them off, B told investigators. The three boys got off, B said, but as the truck started up C jumped upon the running board, tried to grab the knob on the door, and slipped, falling under the wheel. When B stopped, C was lying 8 to 10 feet behind the truck.

Police arrested B on a charge of driving so as to endanger life. In court, where he pleaded not guilty to the charge, he was acquitted. The motor-vehicle department returned B's license to him a month after the accident.

The last accident of this group is presented to show how a fatality, included in motor-vehicle accident records, was not in any sense a highway accident, but rather an accident occurring in the course of a construction job. The responsibility obviously rests upon the worker who walked into the path of the truck.

Case 26: Backing up his dump truck, carrying a load of about 6 tons, along a road that was under construction, B ran over and killed C.

The accident occurred at 9:30 a. m. in July, in clear weather on a State highway. B testified that he had received a signal from the workman at the mixer to back toward it. Assuming the way was clear, he gave all his attention to avoiding the form at his left, he said. He did not know he had struck C until the workman at the mixer ran over to tell him, B maintained.

B said that he had not seen C walking with another man between the forms in the direction of the mixer. C was knocked down by the truck and run over by the right wheels. C was picked up just in front of the front wheel. B claimed he had been moving at about 1 mile an hour.

The coroner found no evidence of negligence on B's part. The district attorney reported that B was in no way responsible, legally or morally. He urged that his license, which the motor-vehicle department had suspended, be returned to him. The temporary suspension was terminated the day after the coroner's and district attorney's reports had been received at a final hearing. Two months after the accident B's license was permanently returned to him.

Pedestrian's condition.—It has been mentioned that the pedestrian's condition often influences his action, and that a faulty action and unfortunate condition are often difficult to separate. It is particularly so in the case of elderly pedestrians whose physical reactions are often impaired by age, and their judgment and thoughts attuned to a slower moving period. It is apparent in case after case that what appear to be the most reckless actions on the part of many old people involved in accidents investigated in this study are undertaken without the slightest conception of the hazard involved.

Intoxication, on the other hand, is a condition which, by dulling or warping the normal judgment of an individual, can be described as the single cause of many accidents. The two following cases, typical of many similar accidents, were caused by the condition of the individual who, in each case, "staggered" to his death.

Case 27: B said he was traveling east on X street at about 10 miles an hour when C, an 80-year-old pedestrian, staggered off the curb, falling against the rear bumper of B's car. A pickle bottle with liquor in it was found on C's person. He died 2 weeks later.

The accident occurred at 4 p. m. in December, at the intersection of X and Y streets. The weather was clear, the road surface dry.

B said that he noticed C staggering on the sidewalk to his right as he approached the Y street intersection. As he passed, B stated, he saw the man take a step or two. Then, feeling a bump, B stopped in a few feet and found that C had fallen against the car.

A witness, who was waiting for traffic to pass, testified that, as B's car went by, the pedestrian took two steps from the curb and fell flat on his face. A newspaper account said that half of C's face was torn when he fell on the hook-shaped bumper.

No inquest was held by the coroner.

Case 28: At 8:15 p. m. in January, during a rainstorm, A was driving across Y street on X street, a main city thoroughfare, according to A's story, when B, a 60-year-old pedestrian, staggered into the left side of his car.

A claimed that he was driving east with the traffic light green when B, crossing X street against a red light, staggered into the car. A stopped within 10 feet, he said. It was reported that B was intoxicated.

Arrested on a technical charge of reckless driving, A was released on a \$500 bond. The coroner exonerated him. In court, where A was charged with causing loss of life by the careless operation of a motor vehicle, the case was nolle prossed.

The motor-vehicle department concluded B was intoxicated.

Driver's condition.—Drivers' actions, as well as pedestrians' actions are frequently influenced by their conditions. Illness and physical impairments sometimes appear as factors in the causation of accidents. Examples are found of drivers who were known "to have a bad heart" or "to be subject to sinking spells" collapsing at the wheel, and instances are frequently reported of drivers who failed to see approaching vehicles because of poor eyesight. It seems reasonable to believe that conditions such as these can be overcome by appropriate steps on the part of licensing authorities, but the problem of controlling the factor of intoxication, which is the most frequent contributor to "driver's condition" accidents, is quite another problem.

Cases of intoxication among drivers may be no more frequent than among pedestrians, but the consequences are far more serious. An intoxicated pedestrian may, by his actions, bring death or injury upon himself, but generally he himself is the only victim. On the other hand, the drunken driver is a menace to all who travel the highways. The extent of a driver's indulgence is generally impossible of determination after an accident. Medical examination can often reveal a sufficient quantity of alcohol to indicate intoxication, and, of course, in extreme cases mere observation is sufficient for the conclusion that a driver is intoxicated. On the other hand, many case histories disclose drinking in various degrees by drivers prior to the time of the accident, but provide no measure of its extent or of its effect on their actions. Reports show instances in which the drivers admitted drinking beer, wine, or more intoxicating beverages, but a short time before the occurrence of the accident; yet the police could find no evidence of intoxication. Other cases report drivers

who had indulged to the extent of perhaps one or two glasses of beer several hours earlier. Still other reports mention the fact that an empty or partially empty whisky bottle was found in the car, or that the passengers were decidedly intoxicated, as if attempting to impute through circumstantial evidence a condition of intoxication to the driver. It is not believed that there is a deliberate attempt to attribute intoxication where it does not apply. However, due no doubt to the public concern regarding drinking drivers and the havoc which they may cause by their actions, it appears that evidence which might point to intoxication is seldom overlooked.

In analyzing these accident reports it was obviously impossible to distinguish all cases in which the drivers were intoxicated, and it was equally difficult to determine whether the condition of a driver who admitted previous drinking entered into the causation of the accident. In this analysis intoxication was listed as a cause only when it was definitely proved by official verdict or unquestionable statements by disinterested parties that the driver was intoxicated. Therefore the estimate of the number of cases in which drinking was a factor is decidedly conservative.

In the following accident various technical violations appear. A was driving too fast, and he was on the wrong side of the road. But the single cause was quite evidently intoxication.

Case 29: Driving fast in an easterly direction on a through State road while under the influence of liquor, A suddenly swerved left and proceeded in a 135-foot curve across double car tracks to the other side of the road, where he crashed into a sedan which had been brought almost to a stop by its operator, B. Pinned under his car, A was killed.

The accident occurred at 7:35 p. m., in May, while it was still daylight. It was in a thickly populated residential section, in clear weather, with no obstructions.

Witnesses testified A was traveling at a high speed. After striking the left front of the sedan with its left front, A's car rose 3 or 4 feet off the ground and overturned, heading south when it came to rest. B's car was forced a quarter of the way around, to a position paralleling A's car, just east of it. C, a passenger in A's car, had been drinking also.

The medical examiner testified A had enough alcohol in his brain to cause intoxication. There was no court action. The motor-vehicle department found A at fault. It declared B not seriously at fault.

In the following case it seems that being guilty of driving so as to endanger life, and under the influence of liquor, should justify more than a fine of \$100. The motor-vehicle department, considering the limitation of its punitive measures, dealt rather more severely with the offender. Intoxication was the single cause.

Case 30: Driving north on X road, while intoxicated, A swerved off the highway and crashed into a truck which was parked with lights on, in a drive off the east side of the road. A's wife died 6 days later of injuries she received when the right side of the car was ripped off by the impact. The car was completely demolished when it bounded back against a gasoline pump, knocking it over.

The truck was 3 or 4 feet off the road, in front of a garage. According to the police, A was badly intoxicated and declared he had had several drinks of whisky before leaving home 2 hours earlier. His wife had had a cocktail, he said.

It was 6:45 at night in March and there were no obstructions to view.

A was convicted of operating a motor vehicle so as to endanger life and of operating under the influence of liquor. He was fined \$50 on each count.

The motor-vehicle department revoked A's license for at least 10 years.

The courts dealt more severely with the driver involved in the following accident, while the motor-vehicle department meted out the same punishment as in the previous case. The results were different, but the cause the same.

Case 31: A, an unlicensed driver, who was intoxicated at the time, was driving south on a business street in a large city at 2:30 a. m. when his roadster swerved sharply right, crashing into an elevated railway post and then into an iron fence, killing his passenger.

A, the driver, claimed that B, the passenger, was intoxicated also. The accident occurred in clear April weather. The car struck the post, then continued 52 feet until it struck the iron fence surrounding the elevated railway car house. A, who claimed he did not remember anything about the accident, went home immediately after it happened. He was taken in custody there by the police.

A had been convicted twice before for motor-vehicle offenses, once for not slowing down at an intersection and once for driving while under the influence of liquor.

As a result of the fatality he was held for the grand jury on charges of operating while under the influence of liquor, second offense; operating so as to endanger life; leaving the scene after injury to a person and property; manslaughter; and driving without a license. At a hearing a short time later he was sentenced to the house of correction for 9 months.

The motor-vehicle department found him seriously at fault, ruling that his right to drive should remain suspended for 10 years.

It is difficult to imagine a more flagrant example of drunken driving than the following. The motor-vehicle department inflicted the maximum penalty available to it. The court felt the offenses justified a fine of \$400; but the driver, in appealing the case, evidently felt the penalty was too severe.

Case 32: B, 22 years old, while intoxicated, lost control of a coupe he was driving north on X road at 3:15 p. m. in June. C, 34 years old, a passenger in the car, who was intoxicated also, was killed.

The accident occurred on a downgrade in a country district. The weather was clear, and the 20-foot bituminous surface was dry.

According to the testimony and evidence at the motor-vehicle hearing, B was pursuing a car ahead of him and driving at high speed. Twice he went off the road onto the shoulder, but managed to get back to the pavement again. He swerved off the road a third time, and

when he tried to get back on the pavement the car turned over four times, finally landing right side up. While it was turning over the first time, B and C were thrown through the top and across the road. C landed on his head. Two children, who were in the car ahead, looking back, witnessed the accident.

The two men had been to a nearby town where they had been drinking wine and beer. On their way back a front tire had come off and they had driven a quarter of a mile before they discovered it, according to testimony at the hearing. A passing motorist stopped to lend them a hand and had to change the tire for them, since they were too drunk to do it themselves.

A little farther on they stopped to ask directions. The man from whom they inquired testified they backed onto his lawn and then proceeded at such a fast rate that he ran out of his house to see if they were going to make a curve a short distance down the road. The accident occurred on another curve about a half a mile farther on.

Police arrested B for driving so as to endanger life and while under the influence of liquor. He was brought to court on these charges and was convicted. The court fined him \$200 on each count, but he appealed the case.

The motor-vehicle department revoked B's license.

A pedestrian should probably not be walking in the gutter, but neither should the driver be driving there. Yet the driver's condition so affected his actions before and after the accident that drunken driving appears to be the only cause of the fatality.

Few cases of hit-and-run driving are reported in such detail, because so frequently the driver is unaccompanied by passengers.

Case 33: According to the story told by passengers in his car, A, who had been drinking heavily, failed to heed warning that a pedestrian was walking in the right gutter 200 feet ahead of his car and, when he had run him down, would not accede to pleas to stop and render aid.

A was accompanied by a woman friend and two other couples. Two of the group were nurses and one a doctor. The accident occurred at 3 a. m. in June in a thickly populated residential district. The concrete road was dry, the street lighting good. A's headlights were in good condition and there were no obstructions to view.

Passengers in the car related that they had left a hospital dance at midnight after all of them had had a good deal to drink there. They then went swimming and the men continued to drink. A had sufficient room to avoid the pedestrian and was warned that he was there, they said. Two of the occupants advised him to stop, and one of the women tried to get out of the car while it was in motion. The noise of a steel bumper being knocked off the car at the impact was heard an eighth of a mile away, according to reports, although A claimed he heard no sound. The victim, who was thrown over the right front fender, struck the parking light, then the right door handle, breaking it off.

The superior court sentenced A to a year in prison for leaving the scene after personal injury and operating a motor vehicle so as to endanger life. The motor-vehicle department found A seriously at fault and revoked his license for an indefinite period.

The two following accidents were recorded as the result of the condition of the driver. The first apparently dozed off, and the second suffered a heart attack.

Case 34: B's truck left the road after he had dozed at the wheel, the evidence indicates. The truck tore down 60 feet of guard rail, broke off an iron post railing at a culvert, plunged into a ditch, overturned, and burst into flames. B and a hitchhiker, who was on the seat with him, were thrown clear. C, who had been sleeping in a space behind the driver's seat, was burned to death. Three youths who had been following the truck dragged two of the men away from the fire, but were unable to break the windshield to extricate C. C was alive after the crash but could not get clear.

The accident occurred on a curve at 6 a. m. in October. The weather was foggy, but the road surface was in good condition.

The hitchhiker testified that he was talking with B to keep him awake when the truck left the road. He thought that B had dozed. B claimed there must have been some defect in the road. He said something pulled the truck to the right.

Police arrested B. He was exonerated by the coroner. His right to drive was suspended by the motor-vehicle department but, 3 months after the accident, was reinstated.

Case 35: B was said to have had a bad heart attack on December 20. The next day he was driving a truck north on X road when he apparently had another heart attack, slumped over the wheel, traveled 200 feet along the wrong side of the road, and hit a tree and a pole. The truck turned over. B received a fracture at the base of his skull, which resulted in his death.

The accident occurred at 9:30 a. m. on a clear day. The road surface was dry and without defects. The report states that B was traveling at 35 miles an hour.

Fault of a passenger.—It is not uncommon for passengers to commit some faulty action that leads to injury or death to themselves or others. In some cases the fault seems to have occurred while the passenger was performing some very casual act such as attempting to open a car window, and was quite innocently responsible for the accident. In other cases the fault arose through deliberate disregard of safety. No attempt was made to distinguish between faulty action and negligence on the part of the passengers, since the differentiation would be difficult and unreliable, and the total of such accidents is but a small portion of the total. The following cases illustrate various ways in which passengers contribute to the accident total.

In the first, an entirely innocent but faulty action on the part of C was responsible for her death. While the design of the door handle is not assigned as a cause in this case, the question naturally arises as to whether the handle could have been designed to prevent such an occurrence.

Case 36: B testified that he was driving along X road at about 20 to 25 miles an hour, accompanied by his wife and five children. C, his wife, was sitting in the front seat, he said, with a child on her lap, when for some reason she leaned forward and her shoulder struck the door handle, causing the door to open. She fell out, landed on her head, and died 3 hours later.

The accident occurred at 4 p. m. in April. The weather was clear, the road surface dry. The coroner decided the death was accidental and held no inquest.

A somewhat similar case follows. Undoubtedly C turned the door handle instead of the window crank.

Case 37: B stated that C, his wife, fell out of his car when, in an attempt to open the window, she released the door handle by mistake. She rolled down an embankment at the side of the road, and died of injuries sustained.

The accident occurred in a rural district at 11:15 a. m. in April. The straight, through-route road was of concrete construction, 18 feet wide.

B said he was driving at about 30 miles an hour when his wife attempted to open the window of the right door. He heard her call to him, he said, and upon looking around, saw her hanging out of the door. B said he attempted to stop the car, but before he could do so his wife had fallen out.

The police and motor-vehicle officials were of the opinion that C was responsible for her own death. According to the statement of B, no coroner's inquest was held.

In the next case it appears that B was very rightfully "annoyed" by three passengers who insisted on "continually opening the doors and getting on the running board." It appears also that he chose an unfortunate means of "sobering up" his companion, and was perhaps thereby a contributor to the death. But the fault lies so preponderantly with the passengers that passenger's fault is attributed as the single cause.

Case 38: B, aged 18, testified that C, an occupant of his car, fell from it while in a state of intoxication and was killed.

The accident occurred at 12:15 a. m. in July, in a sparsely settled district. The 18-foot, bituminous-macadam road was curved and slightly downgrade. Its surface was dry. B's headlights were on low beam.

B testified that at 10 p. m., 2 hours and 15 minutes before the accident, C and D, his companions, had visited a cafe where they drank considerable beer. Then they bought and consumed a pint of grape brandy. B said he drank nothing, knowing that he had to drive. D and E, a man whom they picked up later in the night, both testified that C was feeling "pretty good." B, they said, was driving him around, trying to sober him up before taking him home.

According to the testimony, the three passengers annoyed B continually by opening doors and getting on the running board. B was going 25 to 30 miles an hour on a curving boulevard, he said, when C stepped out of the right front door to the running board. C lost his balance and fell to the road, fatally injuring himself. B, who had been paying no attention to C's actions, did not stop the car until one of the other occupants called to him.

The motor-vehicle department concluded that B was not at fault; that the accident was caused by C, who was under the influence of liquor. B's license was returned 6 weeks after the accident.

Deliberate disregard, not only of his own safety but also of a company regulation, was the faulty action on the part of the passenger described in the following:

Case 39: When B made a right turn into X street, followed immediately by a left turn across the street to a private drive, C, who was standing on the platform body of the truck with his hands in his pockets, was pitched into the road and was killed.

The accident occurred at 7:40 a. m. in April. B testified he was driving his 5-ton truck at about 15 miles an hour, and did not know that C had fallen off until he stopped at the entrance of the drive to open a gate.

The platform body of the truck had neither sides nor back. There were two hand trucks toward the rear and one in the middle of the platform. Three of C's fellow employees were standing at the rear holding on to the stakes at the back of the cab. Two others were seated. It is a company regulation that the men sit down unless they are standing at the cab holding on to something. The other men had twice warned C, they testified, to sit down, but he refused. He was standing about 6 feet from the rear, smoking, with his hands in his pockets, they said.

According to the testimony at the hearing, when the truck swerved right, then left, C lost his balance, tried to grab the hand truck in the center, missed it and pitched headfirst into the road where he rolled to the west gutter. The men shouted, but the truck made so much noise the driver did not hear them. When B got out to open the gate at the drive he saw C.

The motor-vehicle department suspended B's license. At a hearing a month after the accident, the referee concluded that B was without serious fault. B's license was returned to him.

Driver's faulty action.—It has been stated that in many cases distinguishing between negligent and faulty action is extremely difficult, but this differentiation has been attempted in the following cases.

These accidents are typical of those in which it is considered that the drivers acted in a faulty manner. The first case history describes a grade crossing accident in which the driver took the precaution of slowing down at least to the extent that shifting gears was necessary, and presumably satisfied himself that his way was clear. After this precaution it was considered that his failure to see the oncoming train was not a negligent, but rather a faulty, action.

Case 40: B's tractor-trailer was struck by a north-bound railroad train on a crossing. C, a helper on the truck, jumped, but B did not manage to get out before the collision. The train carried the truck three-fourths of a mile. B was burned to death when the truck's load of 40 barrels of whisky caught fire.

The accident occurred at 7:45 p. m. in December. It was dark, but the locality was lighted by street lights. The weather was clear and the crossing surface dry.

According to the police report, B slowed up when he came to the crossing, shifted gears, and started across. He did not see the train approaching from the south until he was on the crossing.

There is no record of police or court action.

In the next case the coroner's conclusion that there "was no willful neglect or misconduct on her part" seems logical in view of the circumstances described, and the accident is therefore attributed to a faulty action.

Case 41: Driving on a through route in clear weather at 6:30 p. m. in April, A, a 62-year-old woman, lost control of her car, which struck an embankment. B, a passenger, died from injuries received.

The accident occurred at dusk on a slight curve. A, and B, who was able to make a statement before she died, testified that the steering apparatus seemed to give way, throwing the car against an embankment. A mechanical examination, however, showed the steering apparatus to be intact.

There was no arrest, the police concluding the accident was unavoidable. The coroner exonerated A, reporting that something she couldn't recall must have diverted her attention, but that there was no willful neglect or misconduct on her part.

A month after the accident A's license was suspended by the motor-vehicle department until a later hearing. Up to May 1937, A's license had not been returned to her.

ACCIDENTS RESULTING FROM A COMBINATION OF CAUSES

The majority of accidents result not from a single cause, but rather from a combination of causes or circumstances. The accidents described in the following case histories fall in this latter category. The causes have been assigned by the investigators and are based on their judgment. It is to be expected, therefore, that opinion may differ in some cases as to whether all the causes are properly included or whether some are omitted, but it is felt that in general the causes have been reasonably assigned. In no case has one cause been listed as more important than the other; and in considering these reports, it must be recognized that they are classified into various groups for illustrative purposes only. Obviously, an accident to which four causes are assigned might be classified under any one of the four, and the fact that it is classified in a particular group does not mean that that cause is the most important. The reports are cited and grouped to show how the particular cause is combined with various others to result in an accident, with no thought as to the extent that each contributed with respect to the others. Again it is emphasized that the reports do not necessarily appear in the same proportion that the various causes appeared in the entire sample.

Speed as a contributing factor.—It has been pointed out that speed alone sometimes results in accidents, and that for such a result the speed need not necessarily be high. It is speed too high for the particular conditions that is serious. However, the high place which speed assumes in the list of accident causes is a result of the frequency with which it appears as a contributing factor. Driving at a speed too high to permit proper action in the face of an unexpected hazard is apparently a very common practice.

By far the most frequent condition for which speed is excessive is poor visibility at night, particularly when visibility is made still less by the blinding headlights of an approaching vehicle. The following case histories are typical of many in which the speed was too fast for this condition. It will be seen that in some cases the drivers slowed down materially because of the approaching lights, but still were unable to see objects in the roadway but a short distance ahead. In certain instances there is no visibility, as the driver is temporarily blinded, and absolute safety requires a complete stop. When the condition arises so suddenly as to make a complete stop impossible, the speed becomes too fast for the visibility, despite the fact that the condition is beyond the control of the driver. It appears that reduction in accidents from this cause will depend on controlling the condition rather than the driver.

Another factor which appears repeatedly in the cases cited here is the presence of pedestrians on the road surface. It is quite evident that they do not realize that they are practically invisible to a driver, especially when another car is approaching in the opposite direction, and many fatalities result from their misplaced confidence that the driver will see them. The first of these cases is an example of exactly this situation. The pedestrians "thought the operator would turn to avoid them." The operator claimed he was blinded by oncoming headlights but, at any rate, did not see the pedestrians until he was directly upon them. Despite the conflicting testimony and the accounts so muddled that the court and motor-vehicle inspector disagreed, the fact remains that the pedestrians contributed to the accident by their disregard for their own safety. Speed too fast for visibility and faulty action on the part of the pedestrians were responsible for the accident.

Case 42: Y street enters X street on the north side. C and D, two pedestrians going east on X street, were crossing Y street when B's car, heading west on X street, struck C, a 42-year-old man, and fatally injured him.

The accident occurred at 11:35 p. m. in September, in a thinly settled district. The 22-foot bituminous road was slightly upgrade to the west. Its surface was dry and the weather clear. Street lighting was poor. A large elm tree, surrounded by a curb, stood in the center of Y street, on a line with X street's north curb.

D and C both told the same story. They said they were crossing Y street, facing oncoming traffic, with C on the right or nearer the roadway, when they saw the headlights of a car approaching at an estimated speed of 45 miles an hour. They said they thought the operator would turn to avoid them, but he did not. C was knocked down.

B claimed his lights were on high beam, his speed less than 25 miles an hour, and the pedestrians only 10 to 12 feet away when he first saw them. Headlights of an east-bound car, 100 feet away, blinded him, B said, and although he tried to turn left he could not avoid

striking C. The pedestrians claimed there was no other car. B also mentioned seeing D before he noticed C, who was walking on the side nearer the roadway. B was corroborated in his testimony by a passenger who was with him in his car.

In court B was acquitted of a charge of driving in a negligent manner. The inspector said that B should have seen the pedestrian sooner; if headlights blinded B, he should have stopped. The motor-vehicle department revoked B's license.

There can be no question in the following case that B's speed was too fast for various conditions, one of which was the visibility. Although his failure to stop immediately was not a cause of the accident, it stamps him as an irresponsible driver. The pedestrian, on the other hand, should have realized that two cars abreast would occupy the better part of a 12-foot road, and the shoulders as well, and have sought a refuge off the shoulder. It seems reasonable to assume his age was a factor in his failure better to protect himself. Speed excessive for the visibility and for the type of road, the pedestrian's condition (elderly), and his faulty action all entered into the causation of this accident.

Case 43: B, 20 years old, with 1 year's driving experience, struck and instantly killed C, a 70-year-old male pedestrian, who was walking along a State highway.

The accident occurred at 8:45 p. m. in August. The road, slightly downgrade to the south, was a 12-foot asphalt-macadam with 2½-foot shoulders. It was dark, the weather was clear, the surface of the road, dry.

B testified that he was driving south at about 35 miles an hour, with his headlights on high beam. The bright lights of a north-bound car temporarily blinded him. B said he pulled to the right to avoid that car, and was pulling back onto the road when he struck C, who was walking south.

A trooper, who arrived shortly after the accident occurred, testified that he picked up C's hat 60 feet back from the body. He said C had been struck by the right front of B's car. According to the trooper, the windshield and top of B's car were down. He thought B had been operating at fully 55 miles an hour.

B said that he and his 3 passengers—two of whom were in the rumble seat—had been on their way to a movie. He testified that he became frightened after striking C and drove one-eighth of a mile to an intersection, where he turned and came back to the scene of the accident. Occupants of the north-bound car, the trooper testified, stopped and called a doctor.

The coroner and the district attorney reported that there was no evidence of culpable negligence on B's part. His license was suspended; following a hearing held 5 months after the accident, it was revoked.

Accepting the report of the police as correct, it is concluded that a negligent driver (windshield wiper not operating), a speed too fast for the visibility (rain and oncoming headlights), and an inattentive pedestrian contributed to the following accident.

Case 44: C, a 41-year-old male pedestrian, was crossing X street from south to north when he was struck and killed by B, who was driving east on X street.

The accident occurred at 10 p. m. in April, during a drizzling rain. The bituminous road is 45 feet wide. Police reported that there was an arc light 131 feet east and another 111 feet west of the spot where C was struck. B claimed his windshield wiper was working, but police reported it was not, although it was in working order.

According to Mrs. C, she and her husband had left a house on the south side of X street and were walking west on the south sidewalk. Just before reaching the Y street intersection, they started to cross over to the north side of X street. The evidence indicates that she was walking about 5 feet ahead of her husband. He was about 20 feet north of the curb when struck.

B testified that he was driving east at about 20 or 25 miles an hour when he approached the Y street intersection. He slowed down, he said; and shifted to second gear. When he was beyond the intersection and had shifted back to high gear, regaining his speed of 20 to 25 miles an hour, he said, he saw C. B claimed, however, that the lights from a north-bound car temporarily blinded him. When he saw C again, he said, he swung sharply to the right, applying his brakes, but the extreme left front of the left fender knocked him down. C was found at the left rear of the car.

Mrs. C said they had not seen a car. B said he did not see the woman at all. B said C was about 5 feet away when he first saw him. The motor-vehicle-department referee concluded that B was inattentive, that his windshield wiper was not working, and that his vision was obscured by rain.

In court, B was found not guilty of operating so as to endanger life. The motor-vehicle department revoked his license. In 1924 B had had his license suspended for the improper operation of a motor vehicle.

The following case history describes a very common type of accident. The driver, blinded by headlights, according to his own testimony, which seems reasonable, never saw the pedestrian. Driving too fast for visibility, faulty action on the part of the pedestrian, and the pedestrian's condition (age), may be assigned as causes.

Case 45: B stated that he was heading south on a trunk road when he was blinded by the lights of an approaching north-bound car. He claimed that he did not notice C, an 80-year-old male pedestrian, who was walking north on the west side of the road. When he heard the noise of the impact and his wife said, "We hit a man," B stopped the car, backed up, and found C, fatally injured, on the pavement.

The accident occurred at 6:10 p. m. in December, on a concrete road 20 feet wide. The weather was clear, the road surface dry. It was dark.

No action was taken by police or by the court.

Driving too fast for the visibility (oncoming headlights and a drizzling rain), the pedestrian's condition, and also his faulty action contributed to the following accident:

Case 46: C, a 58-year-old male pedestrian, was struck and fatally injured by a north-bound truck at 1:45 a. m. on a dark, foggy morning. It was drizzling. B, the Negro truck driver, claimed that C was walking in the center of the east lane. A witness testified that C was under the influence of liquor.

The accident occurred in November, on a straight, rural, concrete road, four lanes wide. Visibility was poor, being only about 75 feet.

B said he was driving at 30 to 35 miles an hour, when two cars with bright lights approached from the north. B dimmed his lights, he claimed, and as the cars passed, noticed a dark form in the road about 35 feet ahead. It was 5 or 6 feet from the east edge of the highway, he said, about in the middle of the right-hand lane.

B testified that he swerved quickly to the left, but the corner of the truck's body struck the man, throwing him to the pavement on the right side of the roadway. The truck traveled about 20 feet to the left side of the road before stopping.

A witness, following the truck, corroborated B's story, giving his speed as 30 miles an hour. A witness also stated at 7:30 or 8 p. m. he had helped pull the pedestrian out of a creek, and at that time he was under the influence of liquor. B said he noticed no odor of liquor on C's breath.

The coroner exonerated B. No action was taken against him.

Evidently more concerned in catching the streetcar than in the approaching automobile, C met her death in the next case because she was not visible to B, blinded momentarily by oncoming headlights. Too fast for visibility and faulty action on the part of the pedestrian are the causes.

Case 47: B, east-bound on X pike, had just passed an east-bound trolley car when he struck and killed C, a 52-year-old female pedestrian, who was waiting for the trolley about 6 feet from the south curb, according to the police officer who investigated the case.

The accident occurred at 6 p. m. in November, on a straight, two-lane through route, of macadam construction. It was dark; the weather was clear and the road surface dry.

B testified that, because he was slightly blinded by the bright headlights on an approaching car, he did not see the pedestrian until it was too late to avoid striking her. The investigating officer reported that B was driving at about 30 miles an hour and that C became confused when she saw the car approaching.

The coroner exonerated B. The motor-vehicle department took no action against him. In 1928 B had struck a pedestrian but was not arrested.

In another case driving too fast for visibility was, perhaps, the unavoidable fault of the driver, while the pedestrian not only was not using the footpath provided but was walking with her back to the traffic as well.

Case 48: B testified that while blinded by the lights of an east-bound car he struck and killed C, a 15-year-old girl pedestrian, who had been walking along the road.

The accident occurred at 8:40 p. m. in October, on a level three-lane concrete highway. The weather was clear; the road surface, dry.

B stated that he was driving west at about 35 miles an hour, when the lights of a car from the opposite direction temporarily blinded him. After it passed, B said, he suddenly saw a girl directly in front of his car, and though he swerved to the left, struck her with the right front fender, carrying her about 50 feet from the point of contact.

C's sister, D, age 13, and a friend were walking west on the north side of the highway. There was a cinder path for pedestrian use. D stated that C was walking 10 or 12 feet behind them, but that she did not know whether her sister had been on or off the pavement. A police officer reported that he found a blood spot on the highway, 2 feet from the north edge of the concrete.

The coroner rendered a verdict of accidental death. The assistant district attorney reported that no criminal proceedings were pending or contemplated against B. Two months after the accident, B's license was suspended by the motor-vehicle department, but a week later, on receiving reports from the coroner and the district attorney, they returned it to him, pending the final hearing. This was held a month later, and then B's license was permanently returned to him.

Driving too fast for the visibility is by no means confined to the condition of oncoming headlights. Many accidents are recorded in which the drivers were traveling at such a speed that they could not stop within the range of their headlights, an apparently common failing. In this connection it should be observed that "speed excessive for visibility" is not ascribed arbitrarily as a cause of all accidents occurring under the conditions of poor visibility. It is considered that a driver should be operating at such a speed that he can stop or act as necessary on the appearance of any condition he may reasonably expect. For example, it is not uncommon for a vehicle to become stalled and have to stop partially on the highway, or for a horse-drawn vehicle to be very dimly lighted, or entirely unlighted. Such conditions recur frequently; a driver should reasonably expect to encounter one at any time and be prepared to act accordingly. However, if, as in one case investigated, a pedestrian suddenly darts from the shadows of an overhanging tree, outside the lateral range of the headlights into the side of the car, the driver could not be accused of driving too fast, for he should not reasonably expect such an occurrence. In this case poor visibility was a factor, since the driver probably would have seen the pedestrian in daylight. Speed was not a factor, however.

Crashing into a parked truck was responsible for the next driver's death. He obviously was driving too fast for the visibility, and was also inattentive.

Case 49: A, 19 years old, crashed into the rear of a parked truck while driving on X street, a through route, at 10:20 p. m. on a foggy night in March. He died in the hospital a few hours later.

The surface of the road, which is straight at this point, was wet. According to the story told by B, the truck driver, he had thought one of his tires might be flat and had pulled off the road as far as possible to inspect them. Before he had a chance to place flares as required by law, A had crashed into him. There were a sufficient number of reflectors on the truck and his lights were functioning properly, he said.

There was no police or court action. The coroner exonerated B. The motor-vehicle department suspended B's license a week after the accident, but reinstated him 9 days later, concluding that A had been driving too fast for conditions and had been inattentive.

B had a previous record of two accidents and one motor-vehicle offense.

Inattention and driving too fast for visibility were the causes of the following accident:

Case 50: B, 22 years old, and two other young men, 19 and 21 years old, were burned to death when the touring car in which they had been riding burst into flames after crashing into the rear of a truck.

The accident occurred at 3:40 a. m. in January in clear weather on a through-route, four-lane concrete highway. A testified that he was driving east at about 15 miles an hour, having slowed down to attend to a weakening battery, when his truck was jarred by a terrific impact at the rear. He had seen no lights from the approaching car, he claimed, and had received no other warning. He continued a short distance, then stopped. The heat from the burning car was so intense he could not assist the victims, he said.

Investigating officers reported that the lights on the truck were lit and were reasonably bright. A short skid mark indicated that the touring car had swerved slightly to the left in an attempt to avoid the crash. From the extent of the damage, the officers concluded that if the truck had been traveling in the neighborhood of 15 miles an hour, the speed of the car must have been very high.

There were no arrests. The coroner reported he could find no evidence of criminal negligence on A's part. The motor-vehicle department concluded that B had been traveling too fast for conditions.

Driving too fast for conditions prevailing, together with inattention and possibly drinking, resulted in the following accident:

Case 51: Driving up a hill B's car struck the rear of C's semitrailer, killing D, a man, and E, a woman, both passengers in B's car.

The accident occurred at 1:45 a. m. in August on a secondary bituminous-macadam road that was 30 feet wide with marked lanes. The weather was misty, the road surface wet; the district sparsely settled, and street lighting poor. Headlights of both cars were on high beam.

C stated that he was driving south, ascending a hill at 5 to 7 miles an hour, with headlights and tail lights properly lighted. In addition, he said he had two reflectors fastened to the rear, so that B should certainly have seen the trailer unit in spite of the rain. C's semitrailer was carrying about 6 tons of miscellaneous freight.

B, who said he had a sandwich and a 10-ounce glass of beer before leaving a beach resort with his three companions, estimated he was going from 35 to 40 miles an hour. The inspector said he believed B's speed to have been 50 or 60 miles an hour. The force with which B's car struck the trailer led the inspector to conclude that B had been driving recklessly. B's car was completely demolished, and the left rear wheel of the semitrailer was pushed out of alignment.

E, riding beside B in the front seat, was killed instantly. D, riding in the rear seat with his wife, died on the way to the hospital. D's wife received a compound fracture of the skull. B and C were only slightly injured.

Police arrested B on a charge of operating so as to endanger life. In court B pleaded not guilty, but was convicted and fined \$200. Payment was suspended for 3 months.

The motor-vehicle department concluded that C was without fault and that B was entirely to blame for the collision. He had operated at high speed on a wet slippery pavement, had been drinking, and was guilty of gross inattention, having had ample time to see the properly lighted semitrailer unit ahead of him. His license was revoked. C's license was suspended, for office records, and reissued.

In 1929, B's license had been revoked and B had been fined for using a car without authority.

Too fast for visibility and faulty action in driving on the wrong side of the road, contributed to the next accident. It seems that a pedestrian should not reasonably expect to be run over by a car on the wrong side of the road, and therefore she is not considered to have been at fault.

Case 52: Evidence was found on B's roadster to prove that he ran over and killed C, a 47-year old female pedestrian. B claimed that he thought he had run over a tire, and did not stop.

The accident occurred at 12:15 a. m. in September in a sparsely settled district on a bituminous road 45 feet wide. Heavy fog obscured visibility; street lighting was poor.

B claimed he was driving east on X road, his lights on high beam, his windshield wiper working. He saw no one, he said, but felt a bump, as though the car had passed over a tire.

A motorist, who said that a roadster had passed him earlier at great speed for such foggy conditions, found C. Her pocketbook was picked up in the road, 11 feet from the north edge. The body itself was discovered 35 feet to the east of the pocketbook, and 14 feet from the north edge of the roadway. The report states that B was driving on the wrong side of the road when he struck C, who was walking along it. C was a large woman, and there was evidence of a considerable impact.

B claimed that when he reached home he called police, told them his name, said he was a deputy sheriff, and informed them that some men were throwing tires on X road. Police said B gave no name over the phone. They traced the call, and after the body was found went to B's home at 3:15 a. m. B had not yet retired.

Police said they told B that a woman had been hit, asking him if his car had struck anyone. B denied that it had, inviting the police to examine his car. Police stated that B had evidently tried to clean the car, but pieces of the woman's clothing were found clinging to its under part.

B was arrested on a charge of leaving the scene after inflicting personal injury. He pleaded not guilty but the court convicted him, sentencing him to 2 months in the house of correction. The sentence was suspended for 1 year on probation.

The motor-vehicle department revoked B's license and registration for 1 year.

The following case history describes some rather interesting side lights. B, 19 years old, probably followed what under the circumstances was the natural course in taking his father's advice to go on rather than his mother's to stop. It seems fitting that his father share to some degree in the punishment. Driving too fast for visibility, inattention, and the condition of the pedestrian entered into the causation of the accident.

Case 53: B, age 19, admitted that he ran over C, age 52, and left the scene of the accident without stopping. According to B, C was lying in the gutter when he was struck. He died on the spot.

The accident occurred at 12:38 a. m. in September, on a secondary bituminous road, 26 feet wide. The district was sparsely settled. The weather was clear, the road surface dry, and there were street lights.

B claimed that he was driving west down X street, accompanied by his father and mother, and going 15 to 20 miles an hour. He had just left a friend at her door, he said, and had traveled about 500 feet when he saw C lying in the gutter, some 25 feet ahead of the car. He swerved left, B said, but was unable to avoid C, and the right wheels of the car ran over C's chest and head, causing injuries from which he died at the scene of the accident.

B claimed that his mother told him to stop, but his father said: "Drive on," which he did. Meeting a car farther down the road, B said he hailed it, and told the police officer in it to look out for a man lying in the road up ahead. The officer testified that when he saw that C was badly injured, he asked the driver of the next west-bound car to go after B. On being brought back, B denied all knowledge of the accident. The officer said he took pieces of flesh from beneath the right front fender and axle of B's car. In the presence of police, B admitted having run over C. He claimed that a short time before the accident, while traveling east on X street to bring his friend home, he had noticed two drunken men walking in a westerly direction on the north side of the street. The younger of the two seemed to be assisting the elder man, B stated.

B was arrested on charges of operating so as to endanger life and leaving the scene of the accident. In court, he pleaded not guilty to both charges, but was fined \$100 on the first count and sentenced to 6 months in prison on the second. The case was appealed.

The motor-vehicle department concluded that B was guilty of inattention and of leaving the scene of the accident. His license and registration were revoked.

Poor visibility is the most frequent contributor to the conditions for which speed is excessive, but there are many other types of accidents in which excessive speed was a factor, some of which are illustrated by the following case histories. Speed is considered excessive only when it is too fast for conditions which should reasonably be anticipated by the drivers.

The following case is an example of how speed too fast for the surface condition and alinement of the road caused the car to leave the pavement. Contributing to the accident was the faulty action

on the part of the driver, since full application of all brakes is not a proper means of stopping a skid. Evidence indicates that the speed was well over the 20 to 25 miles an hour C described. The highway condition, a curve slippery when wet, might be considered as a contributory factor, but there is not sufficient evidence to record that item as a cause.

Case 54: B was driving west on a $3\frac{1}{2}$ -percent grade downward during a rainstorm, when, after rounding a left curve, he lost control of his car. C, a 71-year-old passenger, was fatally injured.

The accident occurred at 3 p. m. in June on a 20-foot bituminous road in a country district. There were 3-foot shoulders on both sides. B and C told police they were returning from a fishing trip.

B testified that, after rounding a left curve, his car began to skid. He said he applied both foot and emergency brakes and then completely lost control. The car left the road on the north side where, just beyond the shoulder, it knocked over three cement posts, and overturned. Each of the posts weighed 1,200 pounds.

In a statement made before his death, C said they were traveling about 20 to 25 miles an hour. He said he could remember nothing about the accident.

Police arrested B on a charge of operating so as to endanger life. In court he pleaded not guilty to this charge and was acquitted.

The referee at a motor-vehicle-department hearing concluded that the accident was caused by excessive speed and the operator's failure to exercise the care which, under the circumstances, was necessary. His license was suspended. At a hearing held a month after the accident, it was ruled that the suspension should continue.

A speed too fast for the alinement of the highway, probably as a result of the driver's condition, produced the following accident.

Case 55: B was killed when his car left the road on a long curve, at 8:20 p. m. in December. Two men were with B at the time.

The surface of the 32-foot oiled road was dry, but recent rainstorms had left the grass shoulders soft.

After going off the road, the car traveled along the shoulder for 126 feet, then struck an old wire fence. It continued on, went down a slight slope, and crashed into a large tree. The impact turned it over on its left side, pinning B under it. He sustained a crushed chest, fractured skull, and other injuries.

Police investigators thought that B had been driving too fast for conditions. They said there was a street light at the point where the car left the road. They reported that there was no evidence that the men, who had been at the beach preparing a cottage for the winter, were intoxicated. The coroner stated that it was evident that no other car was involved. He said that the condition of the road could have caused a car traveling at a moderate speed, or even at "a speed as high as 35 miles an hour," to leave the road at that point.

According to the police report, one of B's passengers could not remember how the accident occurred. The other testified that he was talking to B just before the car left the road. He said he called B's attention to the fact that they were off the road, but B did not answer him.

A newspaper story quotes the passengers as saying that B gasped for breath just before the car left the road, and that for that reason they thought he might have had a slight shock.

B had been involved in an accident in 1926 and in another in 1929. He had been arrested for reckless driving after the 1926 accident, but, in court, was found not guilty.

The following accident also resulted from a speed too fast for conditions. An oily surface, slippery when wet, seems reasonably ascribed as a contributing factor.

Case 56: Driving on a macadam highway during a heavy rain-storm, A's car skidded into a tree. Two of the three occupants were thrown out. One of them was killed.

The accident occurred at 4:30 p. m. in June, on a straight State highway. The road surface was wet and oily. A, who was dazed, claimed he could remember nothing about the accident. Apparently the car had turned completely around since the rear was badly damaged.

Police investigators concluded that the accident was unavoidable. They did not arrest A at the time, but he was later put under bond. His license was returned to him at a motor-vehicle-department hearing.

Excessive speed, coupled with the driver's condition, caused the following accident:

Case 57: B, who had been drinking, lost control of his truck after rounding a left curve. C, a 73-year-old male passenger, was thrown from it, receiving fatal injuries.

The accident occurred at 4:30 p. m. in September, in a sparsely settled district. The weather was clear and the surface of the 18-foot bituminous road dry.

D, the owner of the truck, testified that he had hired B to drive for the day. The two had gone to a cafe frequented by cranberry pickers, whom D wished to hire. While D was negotiating his business B came in from the bar and asked if he could drive C to his home and then return for D. Not knowing that B had been drinking, D said he gave his permission.

B stated that while he was driving south on X street at 40 to 45 miles an hour, he lost control of the vehicle after making a left curve. The truck ran onto the dirt shoulder on the west side of the road, continued for about 200 feet, cut over to the east side of the road, and then swerved back again to the west. Here it stood up on its radiator and turned over. It had covered about 400 feet in its zig-zagging course.

B was arrested on charges of operating to endanger life and driving under the influence of liquor. He pleaded guilty to the first charge, which was filed. The court sentenced B to 6 months in the house of correction for the second charge.

The motor-vehicle department concluded that B had been driving under the influence of liquor, too fast for conditions. His license was revoked for 10 years, his name put on the registry list. In 1924

B had been fined \$100 for operating under the influence of liquor, his license had been suspended, and his name put on the registry blacklist.

A speed too fast for conditions, and the driver's condition—this time, illness—caused the next accident.

Case 58: Motorists, whom B's car had just passed, estimated that his speed was 75 miles an hour. He was heading east on a through road when he lost control of his car, left the road and crashed into a tree, demolishing the car and killing himself. B was subject to sinking spells, and the investigating officer believed that the driver was suffering from such an attack at the time of the accident.

The fatality occurred at 9:45 a. m. in October, on a 20-foot concrete road in a rural district. The weather was clear and dry. It was daylight.

Speed too fast for visibility and for the road surface condition combined to result in the next fatality.

Case 59: According to the report, C's car was traveling south on a through road at about 20 miles an hour, due to the very heavy fog and the icy pavement. B's car, going south at about 50 miles an hour, came upon C's car so suddenly that it could not stop, and crashed into its rear. D, a 17-year-old male passenger in B's car, was killed in the collision.

The accident occurred at 7:40 p. m. in December, in a rural district. It was dark and foggy. The surface of the 20-foot concrete road was icy. C was a woman driver.

According to the report, B's car swerved diagonally across the road after the crash, stopping off the pavement on the east side. C's car stopped with its right wheels off the west side of the pavement.

Police took no action at the time of the accident, but later B was requested to appear before an examining officer of the operator's license division of the State police. His operator's license was suspended for 3 months and he was placed on probation for the balance of the year. No court action was taken against B.

Excessive speed and faulty action, possibly a result of inexperience in the particular circumstance, on the part of the driver, combined to produce the following accident:

Case 60: According to a witness, B, a woman driver, was driving her car at a fast speed when she lost control, swerved off the road to the right, on again, and then off to the right once more crashing into guard rails and hitting a tree. C, a male passenger in the car, was killed.

The accident occurred at 8 a. m. in May, on a straight highway. The weather was clear, the road surface dry.

B said that they had left for a long trip at 3:30 a. m. She had relieved her husband, and had been driving for about 50 miles when the accident occurred. The right wheels of the car went off the pavement, she said, and she swerved back, but lost control. Two children in the car were injured.

The witness said he was following two blocks behind B's car, and traveling 45 miles an hour. Another witness, working in his yard, said he heard brakes, saw dust flying, and looked up to see the car crash into a tree.

There were no marks to show where the car left the highway the first time, but marks about 50 feet long ran off to the place where the car struck the fence rails and hit the tree with its right side. The body of the vehicle was torn wide open, the frame cut in half. It was removed to a garage in two sections.

The motor-vehicle department suspended B's license indefinitely for failure to appear for the hearing.

The following case is interesting in its complexities. A speed too fast for the turning movement, possibly because of the driver's condition, and a faulty action on the part of the passenger who was intoxicated, combined to produce the accident. No doubt the injuries C sustained were sufficient to cause his death, but any chance he might have had was lost by the time his solicitous companions got him to the hospital.

Case 61: When B, who had been drinking, made a sudden swerve to the left in recovering from a fast left turn into X street, C, 48 years old, who, B said, was intoxicated, was thrown from the truck to the pavement. He was fatally injured.

The accident occurred at 7 p. m. in September. The weather was clear and the surface of the bituminous road, dry.

B testified that he finished work at 4:45 p. m. and, accompanied by C and two other men, drove in the truck to the next town. They all had some beer in a lunchroom, B said. He and one of the men, according to B's story, left after they had two glasses of beer. They went shopping, but C and the fourth passenger continued drinking. B told investigators that when they returned C and his companion were intoxicated. He offered to take them home and the three passengers climbed into the body of the truck.

The evidence indicates that B drove north on Y street at a high speed and did not slow down when he made a left turn into X street. He cut the corner, traveling so fast the truck tipped to one side. Coming into X street, he swung to the extreme right of the street, swerved to the left side, and came back to the right. At this point C, who had been sitting on top of the right side of the body of the truck, fell out. He struck his head on the pavement, then rolled into the grass at the north side of the road. A police officer, who was called to the scene, testified that he found no evidence of liquor on B.

A doctor ordered C removed to the hospital. B and one of his passengers took him to that passenger's home, however, and called another doctor, finally getting him to the hospital at 8:45 p. m. He had a fractured skull, a fractured spine, a fractured collarbone, a brain injury, and was suffering from shock.

In court B pleaded not guilty to a charge of operating so as to endanger life. He was convicted and fined \$100 but has appealed.

the case. The motor-vehicle department suspended his license. A month after the accident, following a hearing, it was revoked.

An unexpected movement of the car ahead was the condition for which speed was excessive in the following case, but an unexpected movement of a car ahead is a contingency for which a driver must always be ready. C undoubtedly felt guilty, to commit suicide, yet it would seem that B, who was the sole survivor, must have been extremely careless in turning immediately ahead of a car going in the same direction and a motorcycle coming from the opposite direction. Excessive speed and faulty action (improper passing) are ascribed as the causes.

Case 62: B testified that he was driving east on a through road at a moderate speed, and was making a left-hand turn, when C attempted to pass him. C's car crashed head-on with a motorcycle operated west by D, who received fatal injuries in the impact. C committed suicide by inhaling carbon monoxide at 7:30 a. m. on the morning following the accident.

The collision occurred at 5:30 p. m. in May, on an 18-foot concrete road that curved gradually to the north. The weather was clear, the road surface dry.

B claimed that he did not actually see the accident and could give no details, although after the crash C's car swerved left, striking B's car.

The coroner found C guilty of negligence in operating a motor vehicle. No action was taken against any of the operators.

C's speed in the next case must have been extremely high if he could not avoid a car that occupied but a third of the highway. A short sight distance was a contributing factor in this case.

Case 63: B, driving north on a State highway, was making a left turn into a drive a short distance from the top of a steep hill, when C, operating a motorcycle south, appeared over the hill and collided with the car. C was killed.

The accident occurred at 5:45 p. m. in July. The weather was clear and the road surface dry. A woman riding with C testified they had been traveling 50 miles an hour. B, who was accompanied by his wife and little girl at the time, testified that he had stopped before turning left and thought the way was clear. From his position, he said, it was impossible to see a motor vehicle coming south until it came over the crest of the hill.

He maintained that he had started across the road when he saw the motorcycle. Thinking he could clear it, he stepped on the accelerator, but C crashed into the right front fender of the car. The evidence indicated that at the time of the impact, B's car was about 3 feet into the driveway with about 4 feet between the rear of the car and the center line of the road.

The district attorney reported that no criminal action was pending against B. The motor-vehicle department returned B's license to him 2 months after the accident, pending a final hearing. Later the same month, following the hearing, his license was permanently returned to him.

Condition of the highway.—Few reports contained information regarding the condition of the highway at or adjacent to the scene of the accident. It was impossible therefore to list separately the highway condition as a cause, although many reports, in describing an accident, gave some hint or a definite indication that the highway itself contributed to the accident. The following case histories are not, as in the case of accidents caused by blinding headlights, for example, typical of a large number of accident reports, but rather are a group of reports selected to show how the highway itself may enter as a factor in the accident occurrence. The condition of the highway is not confined to features of its construction. Poor maintenance or lack of adequate warning or control devices are also considered faults of the highway.

The first of this group of reports illustrates accidents in which the highway was very definitely a factor.

Practically any road can be driven over without mishap, provided everyone who uses it drives properly. But ample evidence demonstrates that everyone does not drive properly, and a safe highway must provide a factor of safety for those who are forced off the surface by the faulty action of another driver, or who may, because of momentary inattention, slip over the edge of the pavement. An example of the result of a poor shoulder is described in the following case history. Faulty action on the part of an unknown driver and the highway condition contributed to the accident.

Case 64: B testified that he was driving west at about 30 to 35 miles an hour when another car approached that forced him off the road. He swerved to what he thought was berm but actually was a ditch covered with high grass. The car ran into the ditch and B and C, his 2-year-old son, were burned by acid from the battery. C died a day later from the burns. B was in the hospital for 10 days.

The accident occurred at 4 p. m. in May, on a straight, dry road. The weather was clear.

The coroner exonerated B. No action was taken against him. Car damage amounted to \$50 or \$60.

Anyone who drives must at one time or another have been involved in a situation such as the following case history describes. The accident was the direct result of improper action on the part of both drivers. Neither should have attempted to pass without assuring himself that the other drivers were aware of his intentions and that his path was clear. Yet the fact remains that the serious consequences in all probability would have been avoided had there been an adequate shoulder.

Case 65: When a car B was passing forced him off the road, he ran into a ditch at the left, finally crashing into a telegraph pole. C, one of his three passengers, died an hour later of injuries she received.

The accident occurred at 4 p. m. in July on a much-traveled State highway in a rural section, at a point where the road curves slightly. The weather was clear and the road surface dry.

B testified that he was driving east about 30 miles an hour with his wife in the front seat with him. Two cars ahead of him were proceeding slowly in the same direction, he said. After sounding his horn, he started to pass the one directly ahead of him. As he was abreast of that car, it pulled out to pass the one ahead of it, B claimed, forcing him off the road.

Neither B nor his passengers obtained the numbers of either of the other two cars. C sustained a fractured skull, broken leg, and internal injuries.

B was cleared by the coroner and district attorney. The motor-vehicle department returned his license to him 3 months after the accident, pending a final hearing. After the final hearing, 7 months after the accident, it was permanently returned to him.

Faulty action on the part of B, as a result undoubtedly of discourteous if not improper action on the part of the other driver, resulted in the next accident which probably would not have occurred were it not for the high crown, slippery pavement, and inadequate shoulder.

Case 66: B told police she was passing a car on a slight left curve when her car skidded on the wet, high-crowned road surface. Her car crashed head-on into a tree and recoiled 8 feet, turning completely around. C, a young woman who was with B, was killed. B was seriously injured.

It was daylight at 8 a. m. in November when the accident occurred. It was misting and the road surface was wet.

B said that she had been following a car that would not give her room to pass, although she had been sounding her horn. When they reached the curve, B saw that the road was clear and started to pass, she told police. She did not strike the other car and skidded before she got by it.

There was no police action. The coroner exonerated B. The motor-vehicle department suspended B's license. A hearing was held 3 months after the accident, but decision was reserved. B's license was returned 3 days later, however.

Police concluded B was responsible for the accident in the next case, probably reasonably, since no other car was involved. Yet the poorly maintained shoulder, leaving an exposed pavement edge, coupled with soft tar in the center of the road, was equally responsible. It is not impossible that B drove too close to the pavement edge to avoid the soft tar.

Case 67: B was driving north on a 20-foot wide concrete road with his wife, daughter, and a friend as passengers, when his car left the pavement. In attempting to get back on to the pavement, he cut short, applying his brakes. His rear right wheel caught on the edge of the pavement just as his front wheels hit the soft tar in the middle of the road. The car began to skid and turned around while it was leaving the road a second time. It struck the shoulder broadside and rolled over completely once, then overturned again, landing on its left side. B's daughter was killed.

The accident occurred at 5 p. m. in July on a through route in a rural district. The weather was clear and the road surface dry. Police concluded B was responsible for the accident. There was no police or court action.

Blinding headlights started the series of events that resulted in the following fatality. Probably a more capable driver, even though forced to use the shoulder, would not have wrecked the car, yet condition of the highway as a cause cannot be disputed. Nine accidents with 4 fatalities at the same spot within a year must have some significance. Poor visibility, faulty action, and the highway condition are the causes.

Case 68: B, accompanied by her husband, her brother, and her sister-in-law, was west-bound and had entered a curve to the left. When she was blinded by the lights of an east-bound car, according to the accident report filed by her husband, B pulled right and went off on the soft shoulder. When she swung back to the pavement the car shot across the road, overturned, and caught fire. Passing motorists righted the car and removed B, who died a few hours later.

The accident occurred on a 2-lane concrete State highway at 11:30 p. m. in December. The weather was clear and the road surface dry. This accident was the ninth to occur in the locality during the year. B's death made the fourth fatality.

A newspaper maintained that because of the construction of the cut-off, the lights of east-bound cars interfere with the vision of west-bound motorists.

Lack of both warning and protective devices contributed to the following accident. Poor visibility was also a factor, but the speed apparently was low, and there is no evidence to indicate that drinking had any effect on the driver. Highway condition and poor visibility are therefore considered to be the causes.

Case 69: B, aged 22, who admitted he had been drinking earlier in the day, drove his car into a canal thinking it was a continuation of the roadway. C, a 19-year-old boy, and D, a 40-year-old woman, both passengers in the car, were drowned.

The accident occurred at 8:30 p. m. in August. It was raining.

B testified that he had taken 4 or 5 glasses of beer at a picnic that day. He had left for home at about 7 p. m., he said, accompanied by his brother, C, and D. All four sat in the front seat because the rumble seat provided no protection from the rain.

B's brother was dropped to get some cigarettes, B stated, and since there was no available parking space, B drove around, intending to pick him up later. B said he made a right turn on X street and then another right turn into an alley heading toward the canal. His lights went out twice, he said, and he replaced the fuses each time. He then proceeded, driving about 20 miles an hour, toward what seemed to him to be the lights of a gas station.

According to a sketch B drew for his accident report, the road makes a sharp right-angle turn, then runs parallel to the canal. Not realizing he was not following the road, he said, he drove into the canal. He said he remembered pulling at D's dress, but could not free her.

C's father testified that during a rainstorm at a later date he examined the location of the accident. He was convinced, he said, that a driver could not see clearly at this point, since the road curves and it is possible to mistake the canal—which is practically on a level with the road—for a macadam pavement. He stated that there were no signs or guard rails there. When B's car was raised, he said, it was in second gear, with the lights still burning.

The coroner and the district attorney reported that no criminal charge was pending or contemplated against B. The motor-vehicle department suspended his license, but on receipt of the coroner's report and a letter from the district attorney, it was returned pending a hearing. It was permanently returned, following the final hearing, a month and a half later.

B had previously been fined for having more than three passengers in the front seat. His license had been suspended for a short period for this offense.

In many instances, although there is not the definite evidence of highway responsibility shown by the preceding cases, there is a very strong implication that even if the condition of the highway did not contribute directly, some improvement either in construction, maintenance, or operation, might have prevented an accident. The following case histories describe such accidents.

There is no statement to the effect that a poorly constructed or maintained shoulder contributed to the following accident, yet it is apparent that the shoulder did not provide the necessary factor of safety. The causes are considered to be the driver's faulty action and a speed too fast for conditions.

Case 70: C testified that, in attempting to get his car back on the roadway after it had gone off the edge of the pavement, he skidded diagonally across the highway into the path of B's car. D, wife of C, was fatally injured. Both drivers were out-of-State men.

The accident occurred at 9:15 a. m. in August, on a bituminous-macadam State highway, 18 feet wide. It was raining.

C testified that he was driving south at about 25 to 30 miles an hour, when his car went onto the shoulder at his right. In pulling back to the road, he skidded across the wet pavement into B, who was going north. B said he applied his brakes but could not possibly avert the crash, as C's car careened directly into his path.

The motor-vehicle department concluded that the accident was caused by C, who was apparently not paying proper attention to the operation of his car, and who was going too fast for conditions. B's right to drive was returned to him; C's was revoked.

The following accident, judging by the speeds of the cars involved, would not be expected to be particularly serious, yet it resulted in a fatality. Negligence and driver conditions (poor eyesight) are apparent causes of the accident. However, there seems little point in erecting a stop sign behind a tree, and in this respect the highway condition must be a factor.

Case 71: Vehicles driven by B, a 20-year-old truck driver, and C, age 18, collided at the intersection of two city streets. B's truck

turned over on its right side, pinning D, B's father, under it. D died.

The accident occurred at 6:15 p. m. in July. The weather was clear, the bituminous road surface dry. X street was 27 feet wide; Y avenue, 35 feet. A stop sign at the southwest corner of Y avenue was obscured by a tree. A driver, going east on Y avenue, could not see it until he came within 35 feet of the intersection. There were no parked cars and no other traffic.

C said that he was driving north on X street at about 25 miles an hour. He was not wearing glasses, as his license required, although his sight was poor without them. B, traveling east on Y avenue, with D as his passenger, claimed he was in second gear and going 8 to 10 miles an hour. The report estimates his speed as 12 to 15 miles an hour. B said he did not see the stop sign nor C's car until it was too late.

The left front of C's car contacted the right front of B's. B attempted to turn left; C turned right. B's truck tipped over on its right side at the northeast corner of the intersection. C's car continued over the curb, onto a lawn on the same corner. D was pinned under the truck.

In court C pleaded not guilty to a charge of driving without a license and in a manner endangering life. B also pleaded not guilty of driving so as to endanger life. Both were convicted and their cases filed.

The motor-vehicle department revoked both licenses. B appealed the decision and he was given permission to apply for a new license in 6 months.

A driver should recognize a wet, oily surface as a dangerous condition and slow down accordingly. A speed too fast for conditions and faulty action on the part of the driver are considered to be the causes of the next accident. Yet a road that is still slippery 2 weeks after oiling and in such a condition as to cause "many complaints" certainly contributed.

Case 72: B, a 78-year-old man, a passenger in A's car, was killed when the car, traveling north downgrade, left the road and ran off the shoulder, striking a tree 25 feet east of the pavement. A was critically injured.

The accident occurred at 2:30 p. m. in August, during a rain-storm, on a straight road. The road had been oiled 2 weeks before and this rain was the first to fall since then. The combination of rain and oil made the road very slippery. There had been many complaints. This portion of the road had been the scene of many fatal accidents. A contended that if there had been a guard rail to protect the sloping shoulders she would not have hit the tree.

According to A's story, she was about halfway down the hill when the car suddenly became unmanageable. She attempted to apply the brakes, but the car slid off the road, over the shoulder and into the tree, she said. The tree was the only one in the immediate vicinity.

Witnesses testified that the car seemed to turn off the road and police claimed they could find no skid marks. One witness said, "The car just slid off the road." The coroner reported that A had

started to pass the car ahead of her, then changed her course, driving off the road into the tree. He held her criminally responsible. A's license was suspended and had not been returned 8 months later.

The driver's condition (drowsy) probably combined with excessive speed to cause the following accident. It seems, however, that the 2-foot distance between the pavement edge and the retaining wall was hardly sufficient.

Case 73: At 2:30 a. m. in September, B, who said he had been driving since 5 a. m. the day before, struck the retaining wall of an underpass and turned over into the path of C's car which was going in the opposite direction. D, a passenger who had been sitting on a temporary seat in B's beach wagon behind the driver, was killed. Another passenger sitting on the temporary seat with D was seriously injured. The temporary seat had not been secured to the floor. B and his wife and daughter, who were sitting on the seat with him, sustained multiple cuts and bruises.

The underpass is located on a slight curve. The road is a through route, 24 feet wide, and constructed of bituminous macadam. The retaining wall is built at an angle with the road so that the far corner on the right is only 2 feet from the edge of the road. This is the point B struck. He said he did not see it although the wall was marked with vertical black and white lines and a reflector.

C testified that he applied his brakes when the truck struck the wall. He said the truck seemed to roll over about four times before it was struck by C's car. The second collision was slight, but did cause some damage to C's car. The beach wagon was wrecked.

B did not blame approaching headlights for his failure to see the wall. He said he was extremely fatigued, having driven 328 miles. He had planned to drive 60 more.

The motor-vehicle department referee blamed the accident on excessive speed and inattention. B's license was suspended and a month after the accident, following a hearing, it was revoked. For the records, B's license was suspended and returned.

A good driver would undoubtedly have escaped accident in the situation in which the following fatality occurred. A speed too fast for conditions and faulty action on the part of the driver, probably through inexperience, caused the accident. The surface of the highway, however, was the condition for which the speed was excessive.

Case 74: B testified that after her car struck a 2-inch hump made by a culvert, it went out of control, skidded sideways off the road, and crashed into a tree. C, a male occupant of the car, was killed.

The accident occurred at 10:45 a. m. in August, on a 20-foot bituminous surface on a through route in a thinly settled district. The weather was clear; the surface of the road dry. Its surface was old and patched, with waves and humps. About 323 feet from the scene of the accident a culvert crossed the roadway diagonally.

B testified that she was driving north at 35 miles an hour, accompanied by C and her 6-year-old son, when her car struck the culvert. Measurements taken by investigators indicate that it skidded for

about 266 feet along the highway and then continued along the west shoulder. After going 57 feet it tipped over on its left side, when B tried to swerve east to avoid a tree, 18 feet to the west of the road. B said that C, who was sitting next to her, grabbed the wheel in an attempt to control the car.

The report states that intermittent tire marks on the highway were made from side-skidding, not from the application of brakes. Upon examination, the car's tires were found to be comparatively new and the steering mechanism in unusually good condition. The car was too badly wrecked for a brake test.

A gas-station attendant, with 30 years of driving experience, had seen the accident. He said that B was going at least 45 miles an hour, and that she did not slow down appreciably prior to turning over.

In court B pleaded not guilty to charges of manslaughter and operating so as to endanger life. The case was dismissed. The motor-vehicle department found B seriously at fault and revoked her license.

In the next case the driver by his own admission was going too fast, but the investigators cited a "grease spot" on the highway as a factor as well.

Case 75: Rounding a curve to the left at high speed, B's car crashed into the headwall of a culvert at the left side of the road. There were at least two passengers in the car, one of whom was killed.

The accident occurred at 6:30 in the afternoon in May, on a State highway. The weather was clear and the road surface dry. B testified that he applied his brakes as he rounded the curve at an excessive rate of speed. He said he thought that either the brakes or the steering gear locked. Investigators were of the opinion that the car got out of control after striking a grease spot in the road. The car, a 1935 model, had been tested the day before.

A month after the accident the motor-vehicle department returned B's license to him pending a final hearing. At a hearing a month later it was decided to close the case, and B's license was permanently returned to him.

It is quite possible that the following accident, attributed to excessive speed, could have been prevented by a shoulder surfaced with material firmer than loose gravel.

Case 76: Police concluded that B was driving east at about 70 miles an hour when his car went off the road on the north side. It continued north on the shoulder for 86 feet, then turned over and rolled for 100 feet. B died at the hospital 2 hours later.

The accident occurred at 6 p. m. in August on a 20-foot concrete road. The weather was clear and the road surface dry. Police investigators reported that there was loose gravel on the shoulder of the road.

Police did not place the responsibility. There was no police and no court action.

Faulty action on the part of a pedestrian as a contributing factor.—A few case histories were included in the group of accidents

resulting from single causes to show the type that resulted only from a faulty action on the part of the pedestrian. Most of the accidents in which pedestrians were involved, however, resulted from a combination of circumstances, such for instance as were illustrated by many of the accidents included in the group caused by blinding headlights. Other contributing factors will be found in the following case histories, grouped to show how the pedestrians' faulty actions entered into the causation of accidents.

Negligence on the part of the pedestrian and also of the driver combined to cause the following accident:

Case 77: B testified that a vehicle driven by him struck and killed C, a 68-year-old pedestrian, on X street about 50 feet west of the Y street intersection.

The accident occurred at 9 p. m. in September, on a concrete through road in a thickly settled district. It was dark, the weather clear, and the road surface dry and downgrade to the west. X road was divided into two one-way lanes, 30 feet wide, by an 8-foot strip along its center. This strip was discontinued at the Y street intersection. Traffic lights were stationed on the northwest corner of X street and on the end of the west strip. Street lights were good; B's headlights were in good condition.

B claimed he was traveling west, downgrade, on the left side of the north lane. As he approached the intersection, the light turned in his favor, he said, and he continued at about 35 miles an hour. When he was 50 feet beyond the west curb line of Y street, B testified, he suddenly saw C walking across the street, only 10 feet away. B said he swung left but struck the pedestrian.

Two policemen, following B, said they saw C leave the curb while they were about 300 feet away from the scene of the accident. C had to walk 20 feet to get in the path of the auto. B said he did not know why he did not see the pedestrian.

B was arrested. The court found him guilty of operating in a manner endangering life and fined him \$25. His license was revoked.

The type of accident described in the following case is confined to cities where there are elevated structures in the streets, but the accident nevertheless is typical of many investigated in this study. The pedestrian was at fault in stepping from an obscured position directly into the path of the vehicle, but the position of the structure contributed as well.

Case 78: B was driving a taxicab south under the elevated railway tracks, on X avenue, when, according to his testimony, C, a 56-year-old male pedestrian, stepped from behind one of the pillars supporting the tracks, into his right rear wheel. C died from his injuries.

The accident occurred at 9:15 a. m. in February, in a large city. The weather was clear, but the road surface was icy. B claimed that the traffic lights were in his favor as he crossed Y street, an intersection. His cab was straddling the left rail of the south-bound trolley tracks, he said. B testified he was about 20 feet beyond Y street and was passing a pillar when the impact occurred. When he heard the impact, he claimed, he applied his brakes, the car coming to a stop within 10 feet of the spot where C was lying. B took C

to the hospital. An investigation made by members of the vehicle homicide squad indicated that the accident occurred 24 feet south of the intersection.

B was arrested after C's death and released under a \$500 bond. In court he was held for grand jury on a charge of homicide, but the case was dismissed. Two months after the accident, the motor-vehicle department returned his license pending a final hearing. Two months later, after the hearing, it was permanently returned to him.

According to B's sworn testimony, this was his first accident involving "serious injury." He said he had twice been summoned for speeding 8 or 9 years before but that, during the 4 or 5 years previous to the fatality, he had not been summoned for any serious violations of the vehicle and traffic laws.

In case after case the driver first saw the pedestrian at a short distance in front of him, as in the following case. The pedestrian certainly acted improperly in walking directly into the path of the oncoming car, but the driver was equally negligent in failing to see her.

Case 79: B testified that he was driving east at about 30 miles an hour, when he saw a woman pedestrian about 4 feet in front of his car. She was crossing from north to south, a witness stated, and, according to B, was two-thirds of the way across when he saw her. B said that C, the pedestrian, stopped when he sounded his horn. He swerved left to avoid her, but she was struck by the right fender and knocked to the ground. The 53-year-old woman sustained fatal injuries.

The accident occurred at 12:30 p. m. in March on a through road, 18 feet wide. The weather was clear, the road surface dry. There were no sidewalks, but only a small footpath. The witness, who was driving on the highway when the accident occurred, said that C was crossing the road about 80 or 100 feet east of an intersection.

Police held B in \$2,500 bond for the coroner, who exonerated the driver. No action was taken against him.

The driver could not possibly be at fault in the following case. The fault lay entirely with the pedestrian, although it is considered that his age contributed. He had neither the mental nor physical agility to escape from the situation in which he found himself; and his apparent inability to withstand the shock of the accident brought about his death. Faulty action on the part of the pedestrian, the pedestrian's condition, and poor visibility are the causes. This report, typical of several similar reports, raises the question of whether the death should reasonably be considered a motor-vehicle fatality.

Case 80: B was following a streetcar in a line of slow traffic when the left front fender of his car struck C, a 73-year-old male pedestrian. C did not seem to be hurt at the time. The impact removed dust and dirt from the fender, but left no other mark on the car.

C died 10 days later from a complication of chronic complaints. An autopsy showed no sign of recent injury. The coroner, however, attributed the death to the accident.

When B's car struck C, traffic was moving in the streetcar track area of the road because of snow piled at the sides. It was snowing at the time and the road surface was icy. There were street lights. The evidence indicates that the heavy traffic confused C.

There was neither police nor court action. The motor-vehicle department returned B's license after a hearing.

There can be no question that the pedestrian's faulty action was a factor in the following accident. Yet here again his condition was a contributing factor. He not only failed, probably because of his defective hearing, to heed the warning of his companion, but could not react quickly enough to avoid the approaching vehicle. The pedestrian's faulty action and the pedestrian's condition (old age and deafness) are assigned as causes.

Case 81: B's car struck and killed C, a male pedestrian, who ran across the highway in spite of his companion's warning that a car was coming. C, aged 71, was partly deaf.

The accident occurred at 4:45 p. m. in August on a straight, 2-lane rural road that was slightly upgrade. The weather was clear, the road surface dry.

B said he was driving at about 40 miles an hour when he noticed 2 men about 60 to 75 feet away, walking toward him along the right berm of the highway. He saw the men stop, B testified, and then C started to walk across the road. B claimed that he sounded his horn, applied brakes, and swerved to the left of the road, nearly going into the left berm. C stopped when one-third of the way across, and then continued at a run without looking where he was going. He was struck by the right fender of B's car, thrown against the windshield, and found lying in the left lane of traffic.

C's companion said that the old man wanted to cross the highway to his mail box on the opposite side. The companion said he told C to wait, but the pedestrian either did not hear the warning or else did not heed it.

No inquest was held. The coroner exonerated B. A month after the accident B was convicted of illegal passing on a curve and failing to observe a stop sign. His hearing on the fatal accident was held subsequently and the motor vehicle department suspended his license for 30 days.

Poor visibility, the pedestrian's condition (age), and his faulty action contributed to the following accident.

Case 82: At 6:55 p. m. in September, during a rainstorm, B struck and killed C, a 70-year-old male pedestrian who was an inmate of a nearby county home.

B testified he was driving west on a 2-lane, concrete, State highway in a small town. He claimed that his windshield wiper was working and that, 30 days before, he had had his brakes adjusted.

According to B's story, when he first saw the pedestrian he was 20 feet away, running diagonally across the road from south to north, his head down, coming directly toward B's car. B said he swerved left, applying his brakes, but the right front fender struck C.

The district attorney reported that no criminal action or proceedings were pending or were contemplated against B. The motor-vehicle department suspended his license, but a month after the accident, on receiving reports from the coroner and the district attorney, returned it to him pending a final hearing. The next month, after the hearing, it was permanently returned to him.

The concluding case history of this group presents an exaggerated illustration of a type of person who cannot or will not adjust himself to present-day conditions. The case is by no means typical but it emphasizes a disregard for traffic which is quite evidently found too often among older pedestrians, although fortunately not in this extreme. Faulty action on the part of the pedestrian, the pedestrian's condition (age), and poor visibility, are the causes assigned.

Case 83: B, an 81-year-old woman, who a relative testified, had utter disregard for traffic and had been struck by a car without being injured on a previous occasion, collided with the rear left side of A's car, which was going south on X road. She died in the hospital the next day.

It was dusk at 5:30 p. m. in January when the accident occurred. X road is a 4-lane, concrete State highway, straight at this point. Two eyewitnesses, one a relative of B, and A, all agreed on the circumstances of the accident.

According to their testimony, B was crossing from the east side of the road to her home, which was directly opposite on the west, disregarding the cars that were going both north and south. On seeing B, A swerved to the right but she kept on going, striking the side of the car. A's front wheels were on the west sidewalk when he stopped. He carried B into her home.

A said he had been blinded momentarily by the lights of a north-bound car which turned into Y avenue, an intersecting street on the west, 172 feet south of the point where B was struck. A claimed also, that the lights of two cars parked on the east side of X road south of the Y avenue intersection were shining in his eyes. B had no mental or physical defects.

There was no arrest. A was exonerated by the district attorney and the coroner. The coroner concluded he had been driving at a low rate of speed. A's license was suspended by the motor-vehicle department. At a hearing 3 months after the accident he was charged with reckless driving and his license revoked. The next month it was restored to him.

Defective vehicles.—Definite evidence is available to show that the mechanical condition of the vehicle itself contributes to certain accidents. Although it is not so apparent, it is also true that the vehicle may contribute to an accident through features of its design. For example, reports frequently mention pedestrians being struck by projecting door handles. Other reports describe the results of passengers accidentally opening a door while the car is moving. And it is more than likely that drivers sometimes fail to see pedestrians or other vehicles because of "blind spots" inherent in the car's design.

It is recognized that design features possibly contribute to accident occurrence, but the type of material utilized in this study was in no way suitable for any analysis of the extent of this contribution. Therefore, a vehicle was considered defective only when there was a defect in its equipment or when it was not in a satisfactory condition mechanically. Even for this purpose the data obviously cannot be complete. Unless there was a definite reason to suspect some mechanical defect, an inspection of the vehicle was seldom made, or at least seldom reported. In many cases the vehicle was so badly damaged that a determination of its condition prior to the accident was physically impossible. Thus the estimate of the number of defective vehicles is bound to be conservative. The reports in the following group describe accidents in which the vehicle involved was defective in some respect. In the first of these a defective tire contributed to the accident, which a younger, quicker driver might have prevented. A defective vehicle and the driver's condition (age) are considered the causes.

Case 84: A tire blew out on a car driven by A, 75 years old, causing the car to swerve to the left. It crossed the road, headed for a pole but swerved away from it, turned over, possibly several times, finally coming to rest right side up on the shoulder of the road. B, an 81-year-old male passenger, was killed.

The accident occurred at 3:30 p. m. on a clear afternoon in June on a straight road. B was thrown out. The right-hand door was badly smashed indicating that he might have opened it in an attempt to get out. The tire was a new one and the tube, which had parted at the seam, was partly out of the undamaged casing.

The coroner exonerated A and there was no court action. The motor-vehicle department suspended A's license until a hearing. He had not yet been reinstated 6 months later.

Poor visibility, driver's condition (intoxicated), fault of a driver of a vehicle other than motor-driven (riding an unlighted bicycle), and a defective vehicle (windshield wiper) contributed to the following accident.

Case 85: C, a 62-year old man, riding an unlighted bicycle, was struck by B, who was intoxicated, after dark at 4:55 p. m. in December.

The accident occurred during a rainstorm on a straight State highway in a rural residential district. The road is 28 feet wide and of macadam construction.

B testified that he had left home after he and two other men had consumed a pint of whisky among them. He claimed he was driving north at about 20 miles an hour when he saw the bicyclist ahead of him about 6 feet from the east shoulder. B said he applied his brakes, swinging right, but struck and ran over the bicycle. His car then went off the road into a lot. He admitted that his windshield wiper was not working when the accident occurred.

B stopped a truck driver who took C to the hospital. B then went home where he was later apprehended by police. The coroner found him criminally responsible for C's death. In court he pleaded not guilty to charges of driving to endanger life with death resulting and leaving the scene of the accident. The court found him guilty of

leaving the scene of the accident and fined him \$100 and costs. He appealed the case, which, in June 1937, was still pending. The motor-vehicle department suspended his license.

In March 1929, B had been reported by police for speeding in a zoned area. In December of that year the motor-vehicle department called him for a hearing on a reckless driving charge. In January 1930 he was fined for passing a red light.

The defective steering gear on the car involved in the following case did not seem to be a factor in the accident, but it seems entirely reasonable to conclude that effective brakes, if not sufficient to stop the car before striking the child, might at least have saved her from being run over. Faulty action on the part of the pedestrian, poor visibility, and a defective vehicle are assigned as the causes.

Case 86: B testified that he ran over and killed C, a 7-year-old girl, on a concrete paved street about 40 feet wide in a thickly settled residential district.

The accident occurred at 7:30 p. m. in September. It was dusk, the weather clear, and the road surface dry. Street lights had not yet been lighted but B said his headlights were on.

B stated that he was traveling west at 15 miles an hour, keeping about 6 to 8 feet from the right-hand curb. Witnesses claimed that there was a car parked at this curb, and C ran from behind it into the road. B said he did not see any parked car and that he had a clear view when 6 to 7 feet from the girl. C ran from his right to the left, B said, and though he applied brakes, she was struck by the center of the bumper and run over by the car. Tests revealed B's brakes to be defective, his steering gear loose.

B was arraigned in court on charges of manslaughter and operating to endanger life. The motor-vehicle department revoked his license and suspended the car's registration.

A guardrail that maims instead of protects is hardly an effective guardrail. In the following case, the coroner believed B did not apply his brakes promptly, undoubtedly through confusion arising from the unexpected situation. A defective vehicle, faulty action on the part of the driver, and a highway condition are therefore considered to be the causes.

Case 87: B testified that after rounding a slight right curve he found he could not straighten out his car. The car crashed into a guard fence at the right side of the road. D, a passenger, was nearly decapitated by a piece of fence rail which pierced the windshield. B, who was thrown out, was not injured. B claimed that he lost control when the steering gear broke.

The accident occurred at 7:15 p. m. in October on a four-lane concrete road. It was dark; the weather was clear and the road surface dry.

B claimed he was driving about 25 to 30 miles an hour at the time. A newspaper story related that a disinterested witness substantiated his story. Investigators reported that there were no other vehicles in the vicinity when B's car left the road.

The coroner blamed the accident on an unusual combination of circumstances. He exonerated B, but stated that he probably could have prevented the accident by a more prompt application of the brakes. B was brought to court on a charge of reckless driving but the case was nolle prossed. The motor-vehicle department suspended his license but returned it to him 3 months after the accident, following a reexamination.

Defective headlights and negligence, possibly arising through inexperience, in continuing to drive the vehicle known to be defective contributed to the next accident.

Case 88: B, 16 years old, who had less than 6 months' driving experience, was driving a dump truck with defective lights north on X road when it left the road. Two boys were riding in the front seat with B, and 13 boys were in the body of the truck. C, 19 years old, was killed. All the other passengers were under 20.

The accident occurred at 9:10 p. m. in August on a curve to the left. The road was a through route, 19 feet wide, of bituminous-macadam construction. The weather was clear and the road surface dry.

B testified that he was driving about 30 miles an hour. For 2 or 3 miles, he said, his lights had been going on and off, usually when the truck went over a bump or when it was rounding a curve or turning corners. He did not stop to try to remedy the condition. When he entered the curve on which the accident occurred his lights went off and he did not apply the brakes, thinking, he said, that they would flash back on.

When he was nearly at the end of the curve the car left the road on the right, gradually moving over until it was entirely in the bushes. According to the evidence the right side of the truck struck a tree about 100 feet from the point where it left the road.

After striking the first tree, the truck continued on through the bushes, its right side grazing a low stone wall. Some of the boys were thrown out at the impact and all the others except the one who had been sitting between the two in the front seat were scattered in the bushes or on the wall along the 50 feet the truck covered before its left side hit a second tree. The force of the second impact precipitated the truck over the wall and into a field where it landed right side up.

The three boys who had been riding in the front seat said they were positive that the lights had gone out. Investigators reported that the lights were in working order except that the foot button, which was used to dim them, caused them to flicker between dim and bright. They said that B had been offered the truck on several occasions and had refused it, but this time he took it without asking for permission.

In court B pleaded not guilty to a charge of operating a motor vehicle so as to endanger life but was convicted and fined \$100. He was fined \$20 for using a motor vehicle without authority. B appealed on both counts. In June 1937 the case was still pending.

The motor-vehicle department referee concluded that B was seriously at fault. His license was suspended and, a month after the accident following a hearing, it was revoked.

It is hard to visualize a more flagrant case of the operation of a defective vehicle than is described in the following. There can be little justification for a dealer selling a car unfit for use, nor for the regulations which permitted its sale. The immediate causes of the accident are considered to be a defective vehicle (tire), negligence (in driving such a vehicle and in driving without a license), and faulty action on the part of the driver (releasing the steering wheel).

Case 89: After his car had left the road, B, 25 years old, an unlicensed driver, let go of the wheel and put his arms around his mother who was sitting beside him, according to the motor-vehicle department conclusions. When the car had traveled about 65 feet its right side struck a tree that was located 8 feet from the pavement. It continued about 80 feet farther, then overturned, pinning its three occupants underneath it. B died from his injuries.

The accident occurred at 10:15 p. m. in April, on a downgrade. The weather was clear, and the surface of the 20-foot concrete road was dry. C, who had a license, was in B's second-hand phaeton at the time. He claimed he was sitting in the middle in the front, but B's mother said he was in the rear seat. Both B and C said they had been traveling at 40 to 50 miles an hour.

The three occupants told police that they thought a tire had blown out. The car was thrown across the road to the left, they agreed. They said the top was down.

Investigators reported that the two front tires were badly worn. The left front tire was worn through five plies, and there was a 3-inch break where it had burst. The right rear tire was also blown. Investigators concluded that the rear blow-out had occurred during the accident. C said that when B had bought the car he was not given any guaranty, but told that any chances he took were his own.

The motor-vehicle department suspended C's license. At a hearing held a month after the accident he was found to have been seriously at fault and his license revoked. Eight months later a new license was to be issued to him.

Negligence.—In reviewing accidents apparently resulting from a single cause, it was mentioned that negligence was difficult to differentiate as a single cause, since in the last analysis negligence on the part of some individual involved can be found in nearly every accident. Generally, however, it results in an action which can in itself be ascribed as a cause, such as driving at an excessive speed. The cases in the following group are presented to show how negligence is evident in deliberate actions which even the drivers who were involved must have known were improper and often highly dangerous. A faulty action on the part of the passenger was the immediate cause of the first accident, but negligence in carrying five people in the front seat is an equally important factor.

Case 90: B stated he was driving south on a through road at 30 miles an hour, going down a slight grade on a gradual S-curve. There were four other occupants besides himself on the front seat, and when they noticed a truck coming down the center of the road the girl sitting next to the driver grabbed the steering wheel, causing the car to swerve to the right.

B said that he attempted to bring the car back on the road, but the right door flew open and three of the occupants were thrown to the pavement. Two of them, C, female, and D, male, received fatal injuries.

The accident occurred at 12:15 a. m. in June. The weather was clear; the road surface dry.

B claimed he did not know whether the car struck any object off the side of the road, but a mark on a pole near the place where the accident occurred led police to believe that B's car struck it. B said he stopped immediately and put the injured persons in his car to take them to the hospital. A tire went flat on the way, and they were transferred to another car. C and D were found to be dead on arrival.

The coroner's jury stated that since they could not be certain of the facts of the case, the proper authorities should continue the investigation. No action was taken against B.

A most negligent action on the part of the driver, caused by an equally negligent action on the part of the passenger, caused the following accident. All the circumstances surrounding the mishap point to a deliberate disregard of all thought of safety. The condition of the driver undoubtedly contributed, and perhaps inspired, his negligence. Perhaps the fact that it was his brother whom B killed, and that the victim contributed to his own death, tempered the authorities' punitive actions, yet it seems that such a flagrant violation of safe practices should be recognized more appropriately.

Case 91: According to the police report, B and his brother C had been drinking. B was driving his car northeast on a through road in a residential district when C opened the door. Thinking that C would fall out, B let go of the wheel and tried to pull his brother back into the car. The car went off the right-hand side of the road, hitting a culvert and throwing C out, head-first, onto some cement. C died without regaining consciousness.

The accident occurred at 5:30 p. m. in December, at the intersection of a village street and a highway. The street entered the highway from the southeast. The highway was of concrete, 20 feet wide. Its surface was dry; the weather clear. It was dark. Street lights illuminated the place.

Several witnesses stated that they had seen B and C drinking earlier in the day. B admitted that he and his brother had been drinking. The officer in charge said he learned from several people in B's home city that B had the reputation of being a very careless driver. B was said to have had a number of narrow escapes.

No action was taken at the time of the fatality, but later B was requested to appear before an examining officer of the State police. He was placed on a year's probation in the operation of a motor vehicle.

It was apparently carelessness, in itself negligence in some degree, which prompted C to act as he did in the following case. But B, having seen two people pushing an automobile almost directly in front of him, should have been alert for some unusual action. In failing to be prepared for necessary action in the face of such an obvious hazard, B was negligent.

Case 92: C, 19 years old, who with D had been pushing a car north on the east side of X parkway, was struck and fatally injured by another north-bound car, driven by B.

The accident occurred at 8 p. m. in July, in heavy traffic just north of an intersection. The weather was clear and the road surface dry. According to a witness who had been driving east and had stopped for a red light at the intersection, B was traveling 25 or 30, possibly 35, miles an hour. The witness said she saw the car being pushed by two young men, C at the left rear and D at the right, with no one in the car. When the car started, D jumped in and C stood in the road, where he was struck almost immediately by B's car. Police reported that B swerved left over the white center line. When B stopped C was lying about 10 feet to the rear of the car.

B testified that he was driving about 22, or at the most, 23 miles an hour, with his wife in the front seat with him, his mother-in-law and two sisters-in-law in the rear seat, when he felt the impact on the right side of the car. At first B maintained that he had not seen anyone in the road beforehand, but on further questioning admitted he had noticed the car being pushed by C and D. He claimed he could not estimate the distance between his car and theirs when he first saw them, but said that when he started to pass them on the left there was a 5- or 6-foot clearance between the two cars. It was at that moment he felt the impact, B said.

B testified that he applied his brakes, stopping the car. He had not sounded his horn, he said, because the car was not in his path. B was not sure whether D kept going after the accident or pulled over to the curb.

B was arrested on a charge of manslaughter and held for grand jury on a \$1,500 bond. There was no indictment, however, and the case was dismissed. The district attorney reported that no criminal proceedings were pending or contemplated against B.

Three months after the accident, the motor-vehicle department returned B's license pending a final hearing. A month later, following the hearing, it was permanently returned to him.

The following case history describes a type of irresponsibility that cannot be dealt with too severely. In driving without a license, and in driving the vehicle either carelessly or too fast for its mechanical condition, B was negligent. Perhaps none of the parties involved wished to institute any court action against the driver, but in failing to impose some punishment on B the authorities in a measure condoned his actions.

Case 93: B, aged 18, claimed that his car went out of control on a straight stretch of highway. It swerved over to the right side of the road, he said, but he pulled it back. Next it zigzagged, first to the left, then back to the right, where it upset, pinning C, a 17-year-old girl, beneath it. She sustained fatal injuries.

The accident occurred on a clear, dry night in October at 10 p. m. The 18-foot road was slightly upgrade to the east. B claimed the car's steering gear was defective.

According to the report, B met C at a dance and, while taking her home, decided to go for a ride. While they were proceeding east on the highway, the accident occurred. B had no driver's license, and it was discovered that he sent for a friend who changed clothing with him and assumed responsibility as the driver.

C's mother wrote a letter to the motor-vehicle department claiming that B had been drinking, but there was no other evidence to that effect.

Police held B for the coroner, who returned a verdict of accidental death. The court took no action against him. B's operating privilege was suspended indefinitely by the motor-vehicle department.

INTERSECTION ACCIDENTS

The following case histories have not been grouped under particular causes but are presented as typical of accidents occurring at intersections. Although many of the accidents already described under the various classifications were intersection accidents, it is felt that the frequency of such accidents justifies their separate consideration.

It is apparent that many drivers either do not appreciate, or disregard the potential hazard of intersections. In the following case even the flashing signal failed to induce these drivers to slow down to a safe speed. Excessive speed and negligence on the part of both drivers are ascribed as causes.

Case 94: B's touring car and C's truck and trailer collided at the intersection of X street and Y parkway. D, a 21-year-old female occupant of B's car, was killed.

The accident occurred at 4:30 a. m. in September, on a concrete parkway, 40 feet wide. The weather was clear and the road surface dry. Street lighting was good; two yellow blinker lights were operating at diagonally opposite corners of the intersection, which has an unobstructed view on all sides. Headlights of both cars were found to be in good condition.

C claimed he was driving his 8-ton truck and trailer east on X street at 30 miles an hour. A colored boy whom C had picked up said it was from 45 to 50 miles an hour. B claimed C's speed to be 55 miles an hour.

B, who said he was traveling north on Y parkway at 25 miles an hour, stated that he did not see the truck until he reached the corner. Misjudging C's speed, B said he turned right.

C claimed that he thought he had ample time to cross the intersection, and drove on, but when he saw the imminent collision, he applied brakes and swerved left. His truck struck a tree 17 inches

in circumference, snapped it off, and overturned. All four occupants of B's car were thrown out by the impact. D was pinned between the wheel and the curb.

B said he had one drink with a meal at 11 p. m. C said the yellow blinker lights were out—that he did not see them.

Both drivers were arrested on a charge of manslaughter and driving to endanger life. The court convicted them on the latter charge, fining each man \$100.

The inspector stated that the accident was the result of speed on the part of both B and C. The motor-vehicle department suspended their right to drive. C's license was suspended by a neighboring State also.

The responsibility in the next case rests entirely upon B. Disregard of the "Stop" sign is negligence. A \$20 fine was imposed.

Case 95: Cars operated by B and C collided at the intersection of X and Y streets. D, a 69-year-old occupant of C's car, received fatal injuries.

The accident occurred on a cloudy day in January. The road surface was dry and without defects. X street carried double car tracks.

B, a woman driver, was driving her car south on X street at about 35 miles an hour. She failed to stop for the boulevard "Stop" sign at the Y street intersection, and the front of her car crashed into the left side of C's car, which was heading east on Y Street at about 30 miles an hour.

Police arrested B 5 days after the accident on charges of manslaughter and disregarding a "Stop" sign. The coroner reported that B's negligence had caused D's death. The court filed the manslaughter charge, but fined B \$20 for disregarding the "Stop" sign.

A faulty action on two counts, probably as a result of his age, was responsible for the death of the driver of one of the cars involved in the following accident.

Case 96: B's west-bound car collided head-on with C's east-bound car when C turned directly in front of B's car in an attempt to enter a side road to the north. C, aged 75, was killed.

The accident occurred at 9:05 p. m. in November at the intersection of two roads in a rural district. The main highway was a through trunk line running east and west. The weather was clear, the road surface dry. It was dark.

B stated that he was driving west at about 35 miles an hour when he noticed C's car coming from the west about 300 or 400 feet away. C was on his own side of the road at that time, B said, but when the east-bound car came within 60 feet of B, it turned directly in front of him. B claimed that he swung to the right to avoid the collision. Tire marks showed that his front wheels were on the shoulder and that B's car was entirely on the north side of the road at the time of the crash.

No action was taken by police or by the court. The report states that C was entirely responsible for the accident.

The coroner who investigated the following case implied a highway condition in the lack of a "Stop" sign as contributing to the accident. It is possible, however, that C, who evidently failed to see an approaching vehicle, would not have found the "Stop" more conspicuous. Negligence and faulty action on the part of the driver are definite causes, however.

Case 97: Two cars crashed at 4:10 in the afternoon in May in a rural district at the intersection of two 2-lane concrete roads. C, 70 years old, one of the drivers, was killed.

The weather was clear and the road surface dry at the time. According to B, the surviving driver, he was driving north on X road, approaching Y road, an intersection which cut off at an angle to the northeast and connects with another road crossing X road at a grade separation structure. When he was about 50 to 60 feet from the intersection he saw C, but thought he was going to stop. However, when he was within 25 to 30 feet of the road and C was not stopping, B said, he attempted to drive off the road into an orchard at his left. When the cars collided B was left of the center of the highway.

Investigators claimed there would have been room on Y road for B's car had he turned right. There were no indications, they said, that he had reduced his speed or applied his brakes.

There was no arrest. The coroner reported the death accidental and recommended that "Stop" signs be installed at this point. The motor-vehicle department revoked B's license at a hearing 2 months after the accident.

Driving too fast for conditions is undoubtedly a factor in the following case, regardless of whose testimony seems the most reliable. Also, one of the drivers must have been guilty of a failure to grant the right-of-way. Again the intersection merely provided the setting.

Case 98: D, an 18-year-old girl, was killed when two cars collided at the intersection of two city streets at 5:50 p. m. in September.

The weather was cloudy, but the road surface was dry. D was a passenger in a car driven by B. B testified that he was driving north on X street about 20 miles an hour, approaching the intersection of Y avenue. He said he saw nothing coming from the east on Y avenue, but when he looked to his left he saw C about 25 feet away, driving about 40 miles an hour. B claimed that he was in the intersection, but that C was not; in trying to avert the collision he stepped on the accelerator but to no avail, the front of C's car colliding with the rear of his car. B's car continued for about 60 feet, went over the curb, and came to rest upside down, wedged between a pole and a tree. A surviving passenger in B's car supported his story.

C, on the other hand, testified that he was driving about 15 to 18 miles an hour when he saw B about 25 feet ahead. "Both cars continued," C told investigators, "B's car striking and sideswiping the front of my car as it passed."

The coroner and the district attorney reported that no criminal proceedings were pending or contemplated against B. The motor-vehicle department suspended C's license, and 3 months after the accident following a hearing, revoked it. The department took no action against B. C's record showed two previous motor-vehicle offenses.

Poor visibility is a definite factor in the following case, but whether or not that is a highway condition is open to question. It is true, however, that a wider right-of-way might have left a sufficient open space to provide the necessary sight distance and have prevented the accident. Nevertheless, a speed too fast for the visibility is an unquestionable cause.

Case 99: A corn field on the northwest corner of a rural intersection obstructed the views of B, south-bound, and C, east-bound. The two cars collided in the center of the intersection. A young woman passenger in B's car was fatally injured.

The accident occurred at 1 p. m. at the intersection of two secondary roads. The weather was clear and the road surface dry.

The police officer who investigated the case reported that he thought there was no negligence on the part of either driver. The police department officially recorded, however, that B and C were jointly responsible. There was no police or court action.

If C stopped at the "Stop" sign as he testified in the next case, he was at fault in underestimating B's speed. If, as seems more reasonable, he failed to stop, he was guilty of negligence.

Case 100: B was driving east on Y cut-off when, at the intersection of X road, he collided with C, who was south-bound. D, who was in C's car, was killed. Six other passengers were injured.

The accident occurred at 1:45 p. m. in July. The weather was clear and the road surface dry. There were "Stop" signs on X road at the main road.

B testified that he slowed up at the intersection but continued on when he saw nothing approaching. C suddenly appeared on X road, he said, slowed up as he reached the cut-off, then shot ahead as though he were trying to beat him across.

C told police that he stopped at the "Stop" sign. He saw B, he said, but thought he was about 400 feet away and that he would have time to cross. B's car hit the rear right side of C's car, spinning it around. B claimed he applied his brakes so violently they broke. He coasted into a field where he stopped, he said.

C claimed his car was in second gear when the cars collided. He estimated B's speed at 60 miles an hour. B estimated C's speed at 30 miles an hour. B, 19 years old, had 7 months' driving experience. C was 22 years old.

Police arrested B. Charges were later filed against both drivers. The coroner found C criminally responsible. He was bound over to the superior court on a charge of criminal negligence. In that court the case was nolle prossed.

The motor-vehicle department suspended B's license but returned it to him 4 months after the accident. After a conference, the department decided to issue a limited license to C when he had filed an insurance certificate.

The age of the driver in the following accident may have been the cause of his failure to observe the "Stop" sign. The speed of the other car might have been excessive, but the police, in placing the blame on B, provide the reason for assigning negligence as the cause.

Case 101: B, 70 years old, driving north on a country road, drove through a "Stop" sign at the intersection of another secondary road and was struck by C, 21 years old, who was west bound. A passenger in C's car was killed.

The accident occurred at 2:30 p. m. in December. The weather was clear and the road surface dry. Police concluded that B was driving at about 15 miles an hour and C at about 40 miles an hour. C struck the right side of B's car.

There was no police action at the time, but later B was asked to appear before the examining officer of the State police. His license was revoked for a year. The police held that B was responsible for the accident since he failed to stop at the "Stop" sign. There was no court action.

CONCLUSION

A review of the case histories presented in this report reveals that some accidents may result from a single cause but the majority are the result of a combination of causes or circumstances. In the latter type it is particularly noticeable that many accidents would not have occurred had not all the circumstances developed exactly as they did. The elimination of any one would have prevented the accident. Study of the causes is a necessary preliminary step in any action toward a reduction of accidents, but the final approach to the problem will involve more than a simple compilation of causes to reveal which recurs the most frequently; it will require a critical study of all the causes to determine which factor may be most effectively eliminated. But until the causes are known, prevention measures cannot be intelligently applied.

The basis of any approach to the problem must be the compilation of adequate and accurate statistics. The reports presented in this paper are by no means typical of the reports that are generally available; they were, in fact, selected because of the completeness with which the circumstances surrounding the accident were described. Yet even in these above-average reports, there is sometimes question as to whether the conditions were as stated, whether the facts, particularly when there were no disinterested witnesses,

have been distorted in favor of the parties concerned. Too much emphasis cannot be given the necessity of obtaining complete reports. No detail is too minute nor any person's testimony too unimportant to record, that it may later be weighed in the light of the other attendant circumstances.

The following reports illustrate the lack of substantiating information in one case and the fortunate statement from a reliable witness to refute the driver's testimony in the other.

There is no definite reason to doubt the statements of the driver and his wife in the first case history. The fact remains, however, that no statement from a disinterested party was available. The similarity between the drivers' stories in the two cases is striking.

Case 102: It was misting at 2:15 p. m. in December when B, driving south on X road, struck and fatally injured C, a 34-year-old male pedestrian.

X road is a bituminous-macadam State highway. The accident occurred in a rural district. The road surface was wet.

B testified that C was walking south on the pavement about 3 feet from the west edge of the road. He said he slowed down and sounded his horn as he approached him. C stopped walking, however, and he released the brake, swinging slightly left to pass him. Suddenly C started out into the road, B claimed. He said he pulled his car so sharply to the left that, after striking C, it went off the road on that side.

According to the coroner's report, both B and his wife, who was with him, estimated their speed as 25 to 28 miles an hour. The coroner said he did not consider this excessive even though it was raining. He concluded that the accident was due to the "unexpected conduct" of the pedestrian.

Police arrested B on a technical charge of reckless driving. His case was continued for 4 weeks and he was released under a \$1,000 bond. The coroner exonerated him. The motor-vehicle department suspended B's license indefinitely because of his arrest on a reckless-driving charge. After C's death his license was to remain suspended until a hearing could be held. A month after the accident it was returned to him. B had been involved in two accidents in 1928.

Case 103: While driving west through heavy traffic on a well-lighted city street, A ran down and killed B, a 29-year-old male pedestrian.

The accident occurred at 10:30 p. m. in April. The street was straight and the weather clear. The accident happened to be witnessed by the chief of police of that city, who was also driving west at the time. He testified that he had noticed the pedestrian standing in between the trolley tracks, waiting for the east-bound traffic to pass. When the witness was about 50 feet away from B, he said, A's car passed him at about 35 or 40 miles an hour. It struck B, carried him from 50 to 75 feet, then continued 50 feet more before stopping. The witness said he heard no horn and could not understand why A did not see B in time to avoid hitting him. There were no tire marks in the road.

A, on the other hand, claimed he was driving on the right-hand side of the street between the trolley tracks and the right curb at

about 20 to 25 miles an hour. There were parked cars on both sides of the street, he said, and B stepped from between two of them on his right, about 3 or 4 feet in front of him. A testified that after striking him with the center of the front bumper, he continued 20 feet before bringing the car to a stop. A witness riding with A said she had noticed that his speedometer before the accident showed 25 to 28 miles an hour and she thought they were traveling at about that speed when they struck B.

Police arrested A. He was charged with second-degree manslaughter, but the grand jury returned a "no" bill. The motor-vehicle department revoked A's license.

The concluding case history does not describe a typical driver. In fact, the record is the worst that came to the attention of the investigators. Since it is so striking, the case was included to emphasize the fact that no study of causes of the physical conditions surrounding an accident, or no action taken as a result, can eliminate the personal element. The causes are recorded as driver's condition (intoxicated and defective vision) and faulty action on the part of the pedestrian. However, the most direct means of prevention of this accident would have been the removal of the driver from the road. It seems that there was ample reason to do so.

Case 104: The following is the driver's record:

Date: September 27, 1936, at 6:20 p. m.

Physical conditions: Clear, dark; straight street, bituminous surface; smooth, dry surface.

The driver: B. Sex, male. Age, 40. Occupation, driver. Physical defect, defective eyesight. Make of car, 1936 passenger. Ownership of car, own. Operating experience, 18 years. Insurance, insured.

Driver's record

Name	Date	Offense	Disposition
B	Oct. 4, 1920	Accident—Auto vs. auto.....	Nolle prossed on payment of \$1.
	Mar. 13, 1922	Taillight out.....	
	Aug. 2, 1922	Accident.....	
	Sept. 15, 1922	.....do.....	License suspended.
	Sept. 23, 1922	Reckless driving in above accident.....	Fined \$75.
	Mar. 1, 1923	.....do.....	License reinstated.
	Oct. 24, 1924	Accident.....	
	Sept. 21, 1925	Accident—Auto vs. pole.....	
	Apr. 15, 1927	Accident.....	
	May 27, 1929	.....do.....	
	Nov. 16, 1929	.....do.....	
	Sept. 13, 1932	.....do.....	
	Aug. 9, 1934	.....do.....	
	June 3, 1935	.....do.....	

The pedestrian: C. Sex, male (deceased). Age, 14.

Police action: Arrested B on charges of reckless operation and driving under influence of liquor.

Coroner's finding: B criminally responsible.

Court action: Bound over to superior court on charge of reckless driving so as to cause loss of life. Case still pending May 1937.

Motor-vehicle department: B's license suspended. May 1937, still under suspension.

Nature of accident: B, who had poor eyesight, was driving east on Y avenue when he struck and fatally injured C, a 14-year-old boy.

Police arrested B on charges of reckless driving and driving while under the influence of liquor. After C's death he was charged with recklessly operating a motor vehicle so as to cause death.

B had been involved in 11 accidents since 1920. After a serious accident in 1922, he was convicted of reckless driving and fined \$75. His license was suspended after that accident, but was returned to him 6 months later.

The accident occurred at 6:20 p. m. on a main thoroughfare in a small town. The weather was clear and the surface of the bituminous road was dry.

B testified that he was driving about 20 miles an hour when the boy suddenly appeared out of the darkness. C was in front of his car, B said. B claimed he swung left, applying his brakes, but struck the boy with the right front fender. The evidence indicated that C was walking along the road with traffic.

The coroner found B criminally responsible. B was brought into the town court on a charge of reckless driving and was bound over to the superior court. The motor-vehicle department suspended his license. Up to May 1937 his case was still pending and his license had not been restored.





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MOTOR-VEHICLE TRAFFIC CONDITIONS IN
THE UNITED STATES

LETTER

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U. S. Department of Agriculture

THE SECRETARY OF AGRICULTURE

TRANSMITTING

PURSUANT TO LAW, A SECTION OF A REPORT ON A
STUDY AND RESEARCH OF MOTOR-VEHICLE TRAFFIC
CONDITIONS IN THE UNITED STATES, ENTITLED "THE
ACCIDENT-PRONE DRIVER," TOGETHER WITH RECOM-
MENDATIONS OF MEASURES FOR THEIR IMPROVEMENT

IN SIX PARTS

PART 6

THE ACCIDENT-PRONE DRIVER

FEBRUARY 14, 1938.—Referred to the Committee on Roads
and ordered to be printed, with illustrations

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LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE,
Washington, February 10, 1938.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

DEAR MR. SPEAKER: There is transmitted herewith a report entitled "The Accident-Prone Driver." This is the sixth of a series of reports based upon investigations conducted by this Department under authority of the act of June 23, 1936 (Public, No. 768, 74th Cong.), which authorized \$75,000 for a study of traffic conditions and measures for their improvement.

Other reports in the series deal with the following subjects: Non-uniformity of State Motor-Vehicle Traffic Laws, Skilled Investigation at the Scene of the Accident Needed to Develop Causes, Inadequacy of State Motor-Vehicle Accident Reporting, Official Inspection of Vehicles, and Case Histories of Fatal Highway Accidents.

Very truly yours,

HARRY L. BROWN,
Acting Secretary.



LETTER OF SUBMITTAL

DEPARTMENT OF AGRICULTURE,
BUREAU OF PUBLIC ROADS,
Washington, February 1, 1938.

THE SECRETARY OF AGRICULTURE.

DEAR MR. SECRETARY: In accordance with the requirements of the act of June 23, 1936 (Public, No. 768, 74th Cong.), which authorized \$75,000 for a study of traffic conditions and measures for their improvement, intensive studies have been made by this Bureau in cooperation with agencies of recognized standing in the field of traffic safety.

The results of these investigations have been included in a series of six reports. The sixth of the series entitled "The Accident-Prone Driver" is submitted herewith. Other reports in the series deal with the following subjects: Nonuniformity of State Motor-Vehicle Traffic Laws, Skilled Investigation at the Scene of the Accident Needed to Develop Causes, Inadequacy of State Motor-Vehicle Accident Reporting, Official Inspection of Vehicles, and Case Histories of Fatal Highway Accidents.

Very truly yours,

THOMAS H. MACDONALD,
Chief of Bureau.

ACKNOWLEDGMENTS

The work reported herein was carried on under the direction of the Bureau of Public Roads, Thomas H. MacDonald, Chief. The Bureau obtained the cooperation of a number of organizations and institutions that had previously worked with outstanding effect in the particular field investigated. Special arrangements were made with the Highway Research Board of the National Research Council to permit the interested organizations already engaged in cooperative research with the Board to be drawn upon for active participation in the investigation.

In order to benefit from the best thought of those who have given long and careful study to problems of highway safety, an advisory committee was invited to assist in the planning of the research and the preparation of the reports. The committee, composed of nationally recognized authorities in the field of traffic safety and representatives of organizations long active in the work, includes the following members:

Dr. H. C. Dickinson, National Bureau of Standards, chairman of the Highway Research Board.

Prof. C. J. Tilden, Yale University.

Dr. Alvhh R. Lauer, Iowa State College.

Dr. Harry R. DeSilva, Harvard Bureau for Street Traffic Research.

Prof. Robbins B. Stoeckel, Yale University.

Sidney J. Williams, National Safety Council.

Burton W. Marsh, American Automobile Association.

L. W. McIntyre, American Motorists' Association.

Dr. Ralph Lee, Automobile Manufacturers' Association.

Col. A. B. Barber, Chamber of Commerce of the United States.

W. J. Davidson, Society of Automotive Engineers.

A. W. Whitney, National Conservation Bureau.

Arthur W. Brandt, American Association of State Highway Officials.

John Q. Rhodes, Jr., American Association of Motor Vehicle Administrators.

The studies were conducted with the assistance of organizations represented on the advisory committee and that of numerous other organizations.

In making this report, particular acknowledgment is due the Commissioner of Motor Vehicles of the State of Connecticut, and his staff, for facilitating in every way the use of the State records.

For the Bureau of Public Roads the research program and preparation of this report were under the general supervision of Mr. E. W. James, Chief of the Division of Highway Transport, assisted by Mr.

William G. Eliot, 3d, highway economist. For the Highway Research Board, Mr. R. W. Crum, Director, was in charge. Dr. H. M. Johnson, research associate of the Highway Research Board, was responsible for the plan of the investigation and for the presentation and interpretation of the facts. Miss M. J. Cairns, formerly supervisor of suspensions and financial responsibility of the Connecticut Department of Motor Vehicles, was in responsible charge of compiling the necessary data on operators' records from the official files of that department. Valuable assistance in the statistical analysis was given by Dr. Percy W. Cobb, formerly associate professor of biophysics in Washington University Medical School, and Prof. Tobias Dantzig, of the University of Maryland.

THE ACCIDENT-PRONE DRIVER

It is known from experience in the general field of safety work and from studies of records of drivers in fleets used in industry that certain persons are prone to have mishaps while driving motor vehicles. But definite information as to the proportion of such persons in the general driving public and the extent to which they are involved in the total accidents has heretofore been lacking.

In order to discover the facts of this situation and in the hope that they will give some indication of effective measures to combat the rising tide of motor-vehicle casualties, the accident records of 29,531 drivers in Connecticut were investigated for the 6-year period 1931-36, inclusive. These drivers were selected in such a way that they constituted a random sample of the Connecticut drivers during that period and hence their experience should be typical of the whole driving population of that State, which is probably similar in make-up and experience to the driving populations of other States. The age distribution of the general-accident records of these Connecticut drivers was studied as well as that of the fatal-accident records of 2,100,000 licensees in that State.

These investigations yielded some very significant facts which were corroborated by study of available information relating to several similar though less extensive researches.

It was found that the total accidents suffered by the 29,531 drivers in the 6 years were not distributed among these drivers according to chance, but that there was an excess of accident-free drivers, an excess of drivers who had a high rate of accidents, and a lesser number than might be expected with an intermediate rate. This showed the presence in the population of two groups toward which accident preventive measures should be directed: The large intermediate class, the members of which are not necessarily accident-prone, but which has the bulk of the accidents; and the comparatively small high-accident group composed of drivers who have accidents out of all proportion to their number.

It was shown that well-kept records revealed in comparatively few years a class of high-accident-rate drivers, and that the accident-repeating group in the first half of the 6-year period tended to repeat again in the last half of the period, thus indicating the presence of truly accident-prone individuals.

The importance of segregating this group is indicated by the fact that the accident repeaters who, in the 6 years, constituted 4 percent of the total drivers and 20 percent of those who had accidents, were involved in 36 percent of the accidents.

Study of the relation of age to traffic accidents revealed that the youths in the population have nearly twice their proportionate share of accidents and that their record is particularly bad with respect to fatal accidents. While 100,000 drivers 46 to 50 years old are killing 66 persons, the same number of 16-year-old drivers are killing 201,

the 17-year-olds 186, the 18-year-olds, 148, and those between 19 and 21 about 215. For drivers older than 45, the rate tends to increase up to 65 but does not exceed the average for the whole population. If these relationships hold on a Nation-wide scale, the drivers under 21 killed 3,185 more persons and the drivers under 25 killed 7,785 more persons than they would have if their accident rates had been that of their elders.

These are the facts: Three definite groups in the driving population having different effects upon the traffic situation are recognized: (1) The great bulk of the drivers whose individual accident expectancy is slight but whose numbers are so vast that they roll up an appalling casualty total; (2) the high-accident or accident-prone group, small in number but mighty in deeds; (3) youthful drivers, whose mishaps far outrun their proportion in the driving population.

How best in the light of the facts developed by this investigation to direct remedial measures to these three classes of drivers is a matter for thorough consideration and to some extent for further research. However, a few pertinent and perhaps obvious thoughts can be set down at once.

To lower the accident-rate level for the vast number of drivers in group 1, who have no salient traffic characteristics, every resource must be applied which will make the roads and vehicles safe for reasonable use and will induce in the driving public better habits and safer practices. Here is a task for the united efforts of engineers, law-enforcement agencies, and educators. Many phases of this united purpose are in need of further research and study.

It has been shown that through the keeping and study of adequate accident records, administrative authorities can identify from past performance the group of high-accident drivers which must contain the accident-prone individuals who have distinguished themselves in the period examined. As time goes on, new additions will constantly be made. Questions for future study and research are: (1) How to separate in this group those who are truly repeaters or accident-prone from those who have merely been unlucky; (2) what preventive measures to take after segregation is accomplished.

In the case of the youthful accident-prone class, it is not known whether the trouble is due to inexperience, lack of judgment, or poor training. Some further psychological studies of younger drivers are needed, but in the meantime it seems safe to point to driver training as an obvious approach to the problem. Most States now require applicants for driving permits to pass an examination; but these as a rule do not go beyond a check of ability to handle the machinery, and knowledge of the local rules of the road. In view of the importance of this matter, attention should be given to training new drivers in good driving practice, based upon the hazardous situations which all drivers meet continually and must handle instinctively with good judgment. The training of a driver should go far beyond teaching him to manipulate the controls of the car. Although experience is necessary to complete the development of a good driver, there is much that the beginner can be taught about good driving practices, the methods of meeting particular traffic situations, and the proper attitude toward his responsibilities as a driver.

Further discussion of the various subjects briefly touched upon here and description of the research work will be found in the follow-

ing section of this report. The complete data and their analyses and the discussion of the statistical methods followed will be found in the appendix.

PREVIOUS RESEARCH

In 1933-35 the Subcommittee on Commercial Drivers of the Committee on the Psychology of the Highway, Division of Anthropology and Psychology, National Research Council, studied the accident records of four companies operating large fleets of motor vehicles, together employing some 1,400 drivers. These companies defined a motor-vehicle accident as any event resulting in the necessity of repairing a motor vehicle or treating a person for bodily injury, however slight the personal or property damage might be. Of course, the consequences of many of these accidents were trivial, and a licensing authority is not interested in them for their own sake. But the histories revealed that these accidents were not distributed according to the laws of chance; that an unexpectedly large percentage of drivers went several years without even a trivial accident; that those drivers who had an undue share of accidents of all kinds also had an undue share of serious accidents; that those who often injured themselves in the course of their regular work tended also to repeat automobile accidents often; and finally, that a significant correlation existed between the number of accidents which a driver had in 2 years and the number which he had in the next 4 years. One of these companies took advantage of the information, eliminating during a period of 3 years about one-eighth of its drivers with the worst accident experience, and replacing them with drivers selected at random. Thus it cut its number of accidents per year to a little more than one-fifth of its former rate, and increased the number of miles between accidents about fourfold.¹

From published reports of a number of investigators, there are reasons for believing that even in a "general" population of drivers, whose average rate of accidents is low, the histories of such accidents as are reportable by law are useful. In none of these past studies, however, was the population of drivers sufficiently large, nor was the means of detecting and reporting accidents comparable with the best practices now prevailing in the different States.

For a comprehensive and valid study of accident records, therefore, it seemed well to select some State in which records have been kept accurately over a long period (the definition of "accident" remaining constant), and in which the authorities are reasonably and consistently diligent about enforcement.

SELECTION OF DATA AND METHOD OF SAMPLING

Connecticut records were selected for the study because of their special suitability and because of the generous cooperation offered by the Commissioner of Motor Vehicles, Mr. Michael A. Connor, and his staff.

The Department of Motor Vehicles of Connecticut has made a determined effort to obtain reports of accidents. It is estimated that practically all fatal and personal-injury accidents are reported and a little less than half of the property-damage accidents.²

¹ Johnson, H. M., *Born to Crash*. Colliers, vol. 98, No. 4, July 25, 1936, p. 28, 58, 60.

² See appendix, p. 16.

It was desired to study a large number of drivers, selected at random, whose records were known to be complete for a maximum number of years. Starting with the oldest available list of applicants for renewal of license, that of 1932, every tenth card was drawn of the 408,000 in that file, which resulted in a sample of 40,800 drivers. On eliminating those who did not operate in all of the years, 1931-36, the sample was reduced to the 29,531 drivers whose histories were studied.

DETECTION OF ACCIDENT-PRONE DRIVERS FROM ACCIDENT HISTORIES

From these records it has been established that there exists among the general population of drivers a small group that is definitely accident-prone, and a much larger group that is just as definitely accident-free.

Table 1 shows the 29,531 drivers classified according to the number of accidents recorded against each. There were 1,147 operators, 3.9 percent of the total, who had two or more accidents each, and who together had 2,579 accidents or 36.4 percent of all the accidents. The drivers having three or more accidents constituted about 0.7 percent of the total, but had 10 percent of the accidents. The great majority of the drivers, on the other hand, reported no accidents over the 6-year period.

TABLE 1.—*Distribution of accidents among 29,531 drivers during 6-year period*

Number of accidents per driver	Number of drivers		Number of accidents per driver	Number of drivers	
	Actual	Expected by chance ¹		Actual	Expected by chance ¹
0.....	23,881	23,234	5.....	14	-----
1.....	4,503	5,572	6.....	3	-----
2.....	936	668	7.....	1	-----
3.....	160	53			
4.....	33	4	Total.....	29,531	29,531

¹ See appendix p. 19.

Regardless of how these 7,082 accidents might have been distributed among the 29,531 drivers, it is evident that some drivers would have had more than the average for the group—each driver who had even one accident would have had four times the average. If no driver had had more than one accident, we could still point out that 24.3 percent of the drivers had 100 percent of the accidents. There is, therefore, nothing significant in the mere fact that some drivers exceeded the average, or even that some experienced two, three, or four accidents.

If these same 7,082 accidents had been distributed among the 29,531 drivers by chance without regard to the identities or histories of the individuals, the distribution would have been as given in the last column of table 1. On comparing this distribution with the way the accidents actually fell as shown in the second column of the table, it is seen that there are more drivers who had no accident at all than can be attributed to chance, fewer drivers who had one accident and more who had two, three, or four accidents. It is evident that there must

be something in the characteristics of some of the drivers who had no accident or only one that makes them less susceptible to traffic accidents, and that there must be some reason that causes some of the accident repeaters found in this experience to be more than ordinarily susceptible to accidents.

The important and highly significant fact revealed by this investigation is that the number of drivers who had two or more accidents, and especially of those who had numerous accidents, was very much greater than can be accounted for by pure chance or luck alone. In other words, there is an accident-prone group, who, for various reasons, have more than their fair share of accidents. Their excess accidents cannot be explained by chance but definitely must be attributed to predisposing characteristics of the individuals or of the conditions under which they do their driving.

At the other extreme, the number of accident-free individuals is also too large to be ascribed to chance.

The conclusion is that the good, the bad, and the indifferent drivers do not acquire their respective accident records by luck alone. It seems certain that the accident-prone drivers, as a class, might well be singled out for intensive efforts directed toward reeducation or disciplinary control.

Eight previous surveys by other investigators were also studied; seven of them confirm the present results.³ The present investigation, however, is based on a longer experience than any earlier study of a general population, and its results serve to explain certain apparent discrepancies between earlier surveys which are actually consistent with each other.

CAN FUTURE PERFORMANCE OF ACCIDENT REPEATERS BE PREDICTED?

Once a group has been established as being predominantly accident-free or accident-liable, its future history as a group can be predicted with astonishing accuracy from its past performance.

In the Connecticut driver population studied in this investigation the accident repeaters, considered as groups, behaved consistently in the two 3-year periods making up the 6-year recorded experience. The drivers who were accident-free in either half of the period as compared with those who had one accident, had in the other half of the experience only half as many accidents per driver as the latter group had. The disparity between the one-accident group and groups of repeaters is even more striking. Given the group histories in one-half of such an experience as this, it is possible to predict the corresponding histories in the other half.

To show how these group histories may be used in predicting accident rates, the number of accidents that accrued to each of the Connecticut operators in the years 1931-33 were taken separately and compared with those of the years 1934-36.⁴

Table 2 gives the accident rates in 1934-36 for the groups that had 0, 1, 2, 3, and 4 accidents per operator in 1931-33.

³ See appendix pp. 20-28.

⁴ See appendix, p. 29.

TABLE 2.—*Accident rates in two successive periods of 3 years each*

Accident group 1931-33, accidents per driver	Same groups 1934-36, accidents per driver
0	0.101
1	.199
2	.300
3	.484
4	.700

It is easy to see from table 2 that the accident repeaters in the first 3 years were very much more susceptible to accidents in the next 3-year period than those who, in the first period, had one accident or none.

Figure 1 shows graphically these relations and the relative susceptibility of the repeating and nonrepeating groups to future accidents. The statistical probability that these relative experiences are due to chance is negligibly small.⁵

Figure 2, showing the converse relations, demonstrates that records in the recent past can be used to infer the experiences of corresponding groups in the more remote past.

A 5-year experience of a public utility company shows that similar relations hold even among small numbers of classified drivers if the experience is reasonably long or the group accident rates are reasonably high.⁶

Evidence has been supplied by this company which shows that those drivers who collectively had many traffic accidents in a given period also had among them, during the same period, an unduly large number of personal accidents, principally not connected with driving. Table 3 shows the important fact that liability to traffic accidents is associated with liability to personal accidents resulting largely from inattention and clumsiness.

INTERVALS BETWEEN ACCIDENTS

Accident repeaters tend to shorten the time between accidents as their accidents accumulate. The fourth accident, for example, tends to follow the third more closely than the third follows the second.

Of 191 drivers who reported three or four accidents in the 6-year period, 36, or 19 percent, had their second accident in less than 3 months after the first accident, and 62, or 32 percent, had their second accident in less than 6 months after the first. Twenty-nine, or 15 percent, of the 191 drivers had the third accident within 3 months of the second accident, and 54, or 28 percent, had their third accident within 6 months of the second accident.⁷ It appears that for several months following an accident the operator is more liable to accidents than he was before or will be later.

⁵ See appendix p. 30.

⁶ See appendix p. 31.

⁷ See appendix p. 33.

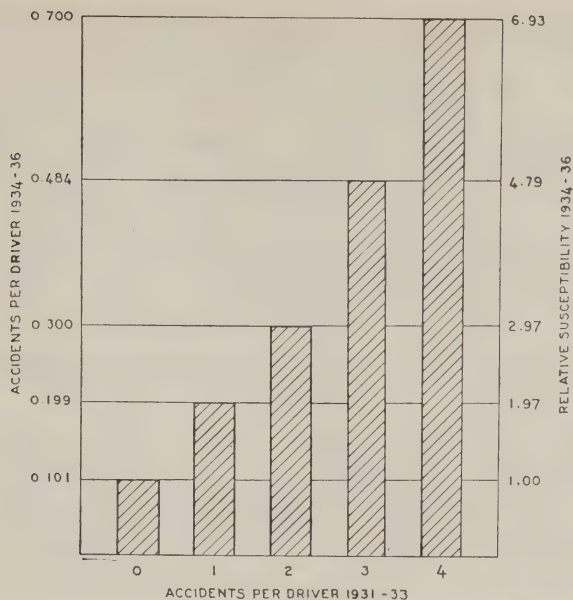


FIGURE 1.—Accidents per driver in 1934-36 of the groups which had 0, 1, 2, 3, and 4 accidents per driver in 1931-33 and the relative susceptibility of the groups to accidents in 1934-36. See table 15 of appendix

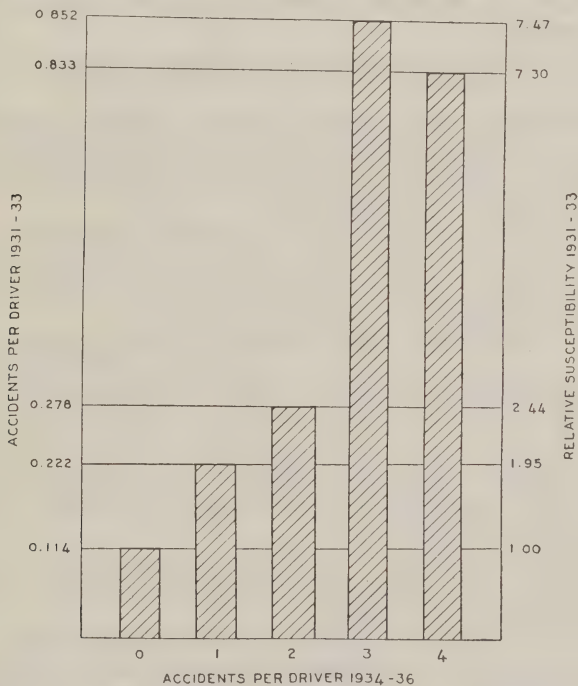


FIGURE 2.—Accidents per driver in 1931-33 of the groups which had 0, 1, 2, 3, and 4 accidents per driver in 1934-36 and the relative susceptibility of these groups to accidents in 1931-33. See table 16 of appendix.

TABLE 3.—*Relation of personal accidents to traffic accidents*

[Drivers for a public-utility company]

Number of operators	Personal accidents per driver, 1930-35	Traffic accidents per driver, 1930-35	Number of operators	Personal accidents per driver, 1930-35	Traffic accidents per driver, 1930-35
109.....	0	1.29	16.....	4	3.75
73.....	1	2.47	12.....	5	3.00
43.....	2	2.74	11.....	6	3.63
44.....	3	3.50	5.....	17	5.40

¹ Or more.

THE CONTRIBUTION OF ACCIDENT REPEATERS TO THE ACCIDENT TOTAL

The accident repeaters among the 29,531 drivers studied were 3.88 percent of the total. Together they caused 39.8 percent of the fatal accidents, 35.2 percent of the nonfatal personal-injury accidents, 37.4 percent of the nonpersonal accidents and 36.4 percent of all of the reported accidents. Thus, they have nearly the same proportion of every kind of accident. For this reason the employer, the insurance company, and the licensing authority ought to have as complete as practicable a record of all accidents, whether their consequences are important or trivial, in order to establish a reliable basis of prediction as early as possible.

CONTROL OF ACCIDENT-PRONE DRIVERS

Since there exists a clearly defined class of accident repeaters, whose group behavior is fairly consistent from one period of time to another, it may properly be assumed that abatement of the accident rate may well begin with attention to this class.

The first requisite is a system of accident reporting and record keeping that will make it possible to classify the drivers as was done in this investigation. Few jurisdictions in the United States have adequate arrangements in force at this time.

The accident-repeating class identified by this means are not all truly accident-prone since the laws of chance will give some normal drivers more than one accident in such an experience as this and, conversely, not all of the accident-prone in the population will be caught in a comparatively short experience; however, as time goes on and the samples are continually enlarged, more of the accident-prone individuals will be included and will tend to identify themselves by their proclivities to repetition.

There is urgent need, however, for the development of some means of separating the truly hazardous drivers in the high-accident group from those who are merely unlucky.

Far better than detecting accident-prone drivers from their records after they have done much damage, would be to examine prospective drivers and determine in some way whether or not they might be expected to have this propensity. To this end scientists have experimented with tests that require the operator to use skills that presumably are necessary or are related to those that are necessary for good driving. With the cooperation of the Iowa State College, the Harvard Bureau for Street Traffic Research, and the Connecticut Department

of Motor Vehicles, the tests developed by Professor Lauer at Iowa State College and Dr. DeSilva at Harvard were applied to about 3,000 drivers in Connecticut where their records could be ascertained. The analysis of the data has not been completed but so far it does not appear that a subject's reaction to any of the particular tests will indicate his propensity to accidents in general. Whether or not reactions to individual tests will indicate proclivity toward particular kinds of accidents has not yet been determined.

What to do about accident-prone drivers after they have been identified is a matter for future study and development. It is probable that some will be found amenable to further training in skill and attitude and that others will prove to be incorrigible. When drivers of the latter class are found, some way must be devised to protect society from them.

Some administrators doubt whether many repeaters profit by disciplinary action such as fines or imprisonment for reckless driving, suspension of driving privileges, and the like. A feature of this investigation not yet completed provided for correlation of tendencies to repeat accidents with tendencies to repeat offenses. One might expect the population to divide—one segment being improved by experience, and another segment tending to habitualize its errors.

ACCIDENTS IN RELATION TO THE DRIVER'S AGE

The attention of the investigators on this project was called to the circumstance that age might be an important factor in highway traffic accidents by an unpublished report entitled "The Driver of the Motor Vehicle as a Factor in Highway Accidents," compiled by the Massachusetts Highway Accident Survey, a Civil Works Administration and Emergency Relief Administration project.⁸ In this report the ages of 786 drivers involved in fatal accidents in 1933 were compared with the proportionate ages found in a random sample of 10,000 drivers. Assuming that the relative number of drivers of each age in the sample of 10,000 was typical of the whole driving population, it was found that the drivers of ages from 16 to 25 had approximately one and one-half times as many fatal accidents as they might be expected to have if the accidents had been distributed among the 786 drivers, irrespective of age.

Three other sets of data more recently published by the Department of Motor Vehicles of Massachusetts exhibit similar characteristics.⁹

In order to obtain more complete information on this phase of the subject, the 5,650 drivers who had one or more accidents (total, 7,082 accidents) in the sample of 29,531 Connecticut drivers studied for the 6-year period 1931-36, were classified according to age and number of nonpersonal, personal-injury, and fatal accidents. The number of accidents that the drivers at each age might be expected to have if the distribution were independent of age was computed from the relative numbers of each age in the entire sample.

The results of these comparisons are shown graphically in figure 3, which depicts the relation between age groups and the ratio of the accidents each did have to those they might be expected to have according to their proportionate representation in the driving popula-

⁸ See appendix, p. 37.

⁹ See appendix, p. 38.

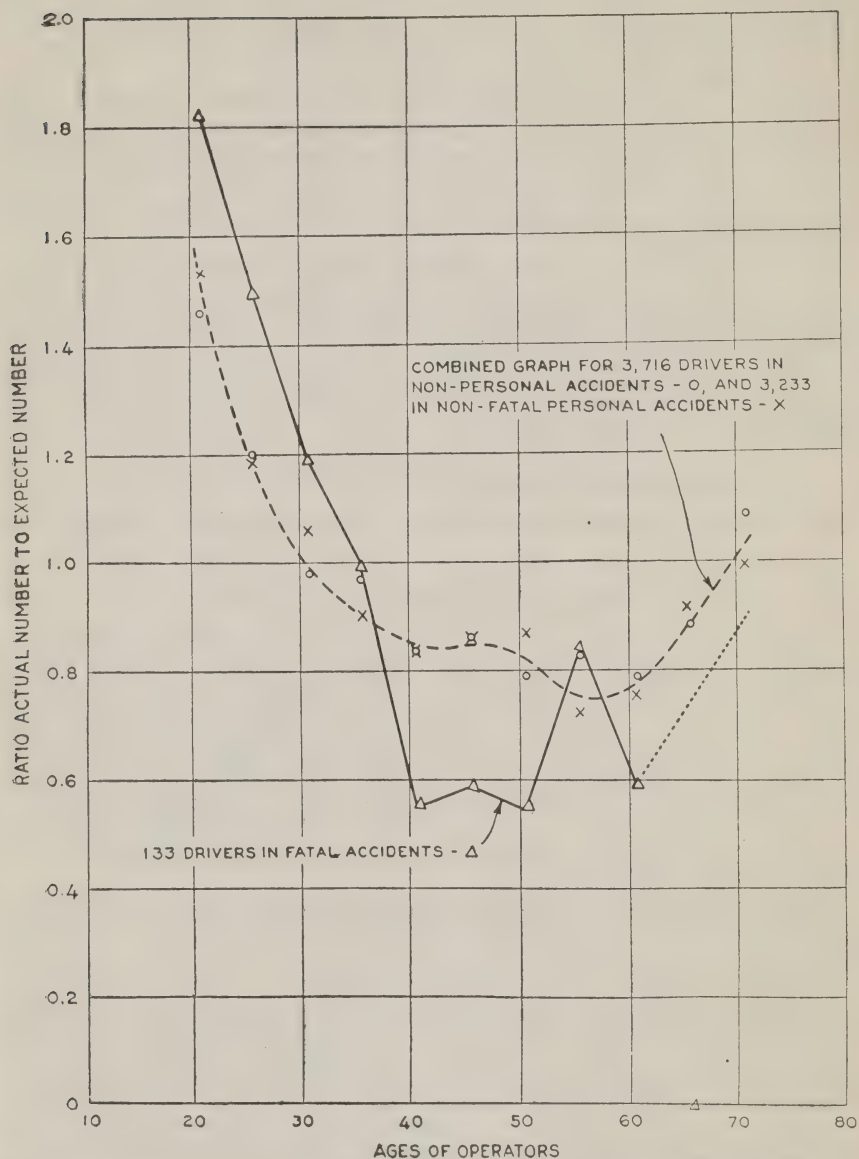


FIGURE 3.—Relation of age to traffic accidents from histories of 29,531 operators selected at random from those licensed in Connecticut in every year from 1932 through 1936. See tables 43, 44, and 45 of appendix.

tion. It is apparent that the youthful drivers have many more than their share of accidents and that their susceptibility is not materially different to property damage and nonfatal personal accidents, their records in these two classes being somewhat better than in the case of the fatal accidents.

For further evidence, all drivers involved in fatal accidents in Connecticut for the 5 years 1932-36 were classified according to age and the accidents accruing to each age were compared with the number which might be expected in proportion to representation in the population.¹⁰ Figure 4 shows the numbers of drivers per 100,000

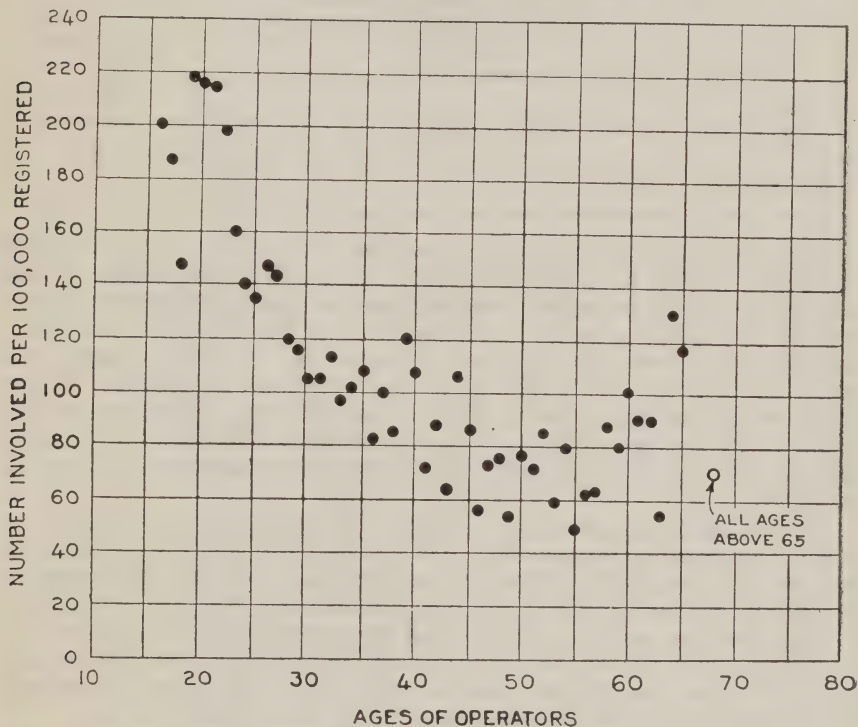


FIGURE 4.—Identified drivers involved in fatal accidents per 100,000 drivers registered. Connecticut whole population, 1932-36. See table 33 of appendix.

registrants involved in fatal accidents for each age from 16 to 65.

In 1932-36 the licensed drivers under 21 years of age constituted but 7.40 percent of the Connecticut licensed-driver population, while those 21 to 25 years of age constituted 15.75 percent. Together these drivers formed 23.15 percent of the driver population, but in the period 1932-36 they had 35.3 percent of all the fatal accidents, 1.52 times as many as the laws of chance allow.

In 10 samples studied from Massachusetts and Connecticut, the drivers under 21 years of age had between 1.24 and 2.10 times as many fatal accidents as they would have had if accident liability were independent of age. The age group 21 to 25 had between 1.29 and 1.65 times as many fatal accidents as they were entitled to have. Their

¹⁰ See appendix, p. 41.

showing in nonfatal personal accidents and in accidents that involved property damage only is also bad.

These findings are also corroborated by data from the District of Columbia showing similar trends in the relation between drivers' ages and 10,995 traffic accidents of all kinds in 1934 and 15,327 from July 1, 1935 to June 30, 1936.¹¹ The ratios of actual accidents to the number expected on the basis of equal liability in these instances are given in table 4.

TABLE 4.—*Ratio of actual to expected number of traffic accidents for drivers of selected age groups, District of Columbia, 1934 and 1935-36*

Age	Year	
	1934	1935-36
16 to 20.....	1.16	1.25
21 to 25.....	1.14	1.34
26 to 30.....	.995	1.16

An interesting side light on the question of why the younger drivers are so susceptible to traffic accidents is shed by comparison of the ratios of actual to expected accidents and actual to expected suspensions of driving licenses for speeding in the District of Columbia.¹² According to these data the suspensions for speeding among the drivers 16 to 26 years of age are about 2.3 times as frequent as one should expect on the hypothesis of equal liability. The comparison of the relation of age to license suspension in the District of Columbia with the relation of age to fatal accidents in Connecticut is shown in figure 5.

If the relation of age to fatal accidents among the drivers in Connecticut holds on a Nation-wide scale, it would have been possible to save the lives of 3,085 persons who were killed on the highways in the United States in 1936 if, by any means whatever, we could have brought the fatal-accident rate of the drivers under 21 years of age to the rate of their elders; likewise, it would have been possible to save about 7,787 of the 37,800 persons who were thus killed if we had reduced the rate of the drivers under 25 to that of their elders.

These findings point to one of the weak spots in safety education and in administration. According to all tests of separate skills which are believed to be used in handling a motor vehicle, the highest average scores usually belong to the age groups in which we find the highest rates of fatal accidents and also of personal-injury accidents. Moreover, it seems to be true that most drivers 20 to 22 years of age are also able to handle a car on the road more skillfully than their elders. It therefore seems that the question is not so much how skillfully a person can drive, as whether he will use the skill that he has. Some skillful drivers, relying upon their agility and alertness, may enter hazardous situations that are a little beyond their ability; whereas less skillful drivers, being aware of their weaknesses, may stay out of them.

Although in each of the years studied, the youthful drivers, in proportion to their numbers, had an increasing share in the fatal-accident

¹¹ See appendix, pp. 49 and 50.

¹² See appendix, p. 50.

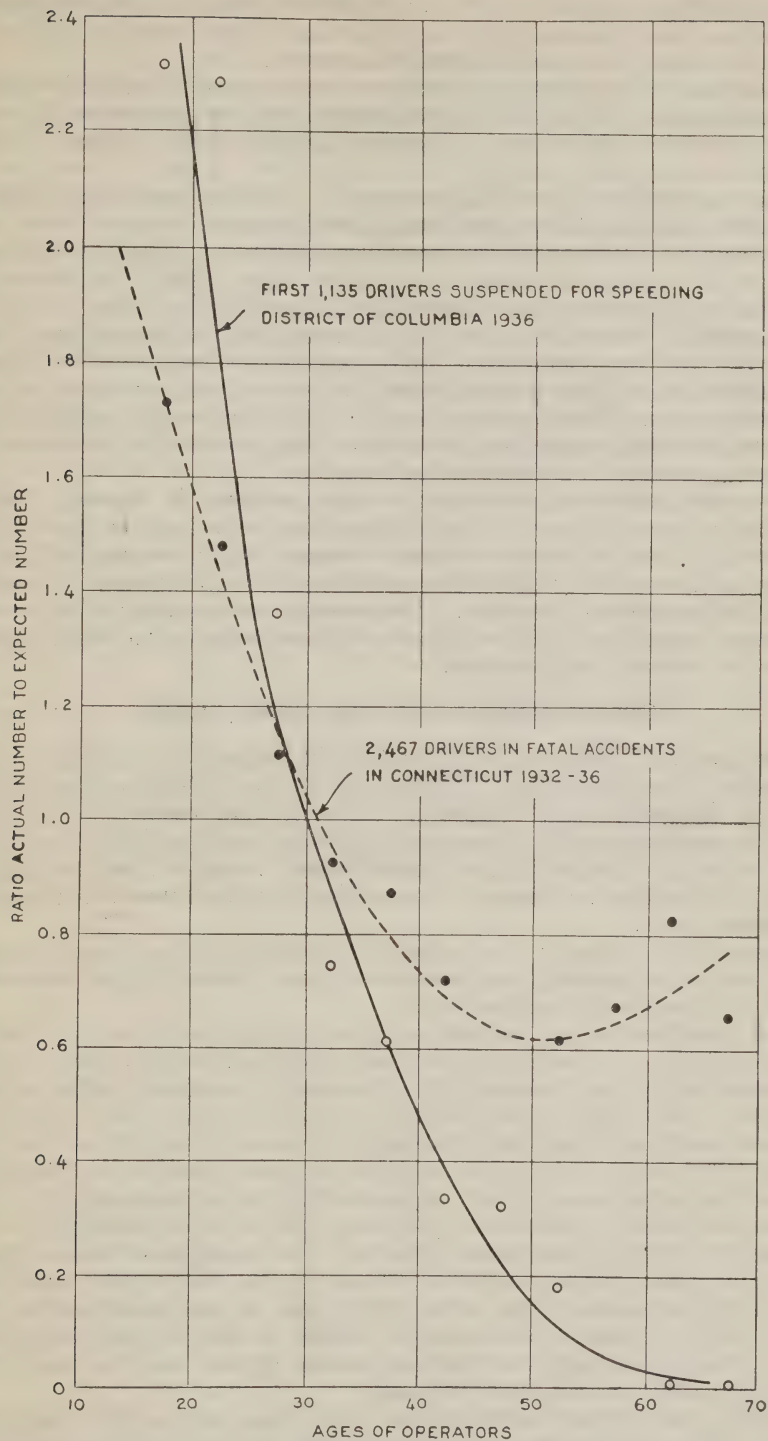


FIGURE 5.—Comparison of ages of motor-vehicle drivers suspended for speeding in the District of Columbia with ages of drivers involved in fatal accidents in Connecticut. See tables 34 and 48 of appendix.

total, their fatal-accident rate did not increase consistently in the period 1932-36. Their increasingly poor showing is due mainly to the fact that the older drivers significantly improved.

Since the 16- to 20-year-old drivers are the most destructive, some persons might wish to raise the minimum age for drivers to 21 years. Why not save 5,000 lives a year by keeping these children off the road?

There are objections to this proposal. Do the youths have many accidents because they are young, or perhaps because they lack experience? If it is only because they are young, then it would not hurt to allow them to season for a few years. But if it is because they lack experience, then they will still lack it when they are 21 as they lacked it when they were 16, although their judgment may have improved in the meantime. It is possible, though by no means established, that 21 is a less favorable age for learning to drive than an earlier age. Furthermore, such a solution would undoubtedly meet widespread opposition from older people who find occasion for the young people in their families to drive.

The most obvious approach to this problem is through better training of new drivers. Teach them not only how to manipulate the vehicle, but a proper attitude toward their responsibilities as drivers and something about the exercise of good judgment in dealing with the hazards of the road. Progress in the training of drivers is dependent upon acquisition of better knowledge as to what constitutes the best driving practice.

GENERAL SUMMARY AND CONCLUSIONS

The personal histories of operators in respect to accidents, law violations, complaints, etc., if properly taken, can be of very great value to highway administrators. Although the records of no State may be nearly complete in respect to nonpersonal accidents in which the property damage is low, nevertheless, records that contain as much information as those of Connecticut are well worth the cost of obtaining them.

There exists among the general population of drivers a small group who are definitely accident-prone, and a much larger group who are just as definitely accident-free.

The distribution of accidents in a population does not follow the law of chance which implies equal liability. In nearly every survey the probability that the data follow this law is practically infinitesimal.

Given the drivers' histories in one part of such an experience as that analyzed from the Connecticut records, and given the law which has been derived, one can predict their histories in the other half of the experience either prospectively or retrospectively. The accident-repeaters, considered as groups, behaved consistently in the two halves of the 6-year period studied. For example, if the accident-free drivers and the one-accident drivers in one-half of the period are considered separately, the latter group had in the other half of the period twice as many accidents per driver as the former group had. The disparity between the first-mentioned group and the more frequent repeaters is still more striking.

Most of those operators who had more than one accident repeated early. The average interval between the first and second accident was about 15 months, but 15 percent of the intervals were not over 3

months, and 27 percent not over 6 months. The distribution of intervals is not normal, as it would be if the first accident had no effect on the driver's propensity toward another. In fact, for several months after one accident, the operators are much more liable than before.

If due regard is paid to the fact that the histories taken through a short period will identify only a part of the population who are predisposed to accidents, it should be possible to base administrative regulations upon these histories. A policy needs to be worked out with great caution, but there is little reason for doubting that the highways could be made much safer if a very small proportion of the drivers who are easily identified were restricted.

In the sample population covered in the report of this survey, 1,147 operators, 3.88 percent of the total, together had 39.8 percent of all the fatal accidents accruing to the population of 29,531 drivers in a period of 6 years, 35.2 percent of all the nonfatal personal accidents and 37.4 percent of the nonpersonal accidents reported. It seems certain that this group might well be singled out for intensive efforts directed toward re-education or disciplinary control.

The younger drivers had an undue proportion of accidents. In a number of samples studied the drivers under 21 years of age had between 1.24 and 2.10 times as many fatal accidents as they should have had if accident liability were independent of age, and the drivers from 21 to 25 years of age had between 1.29 and 1.65 times their share. Thus this survey has singled out another small part of the population against which safety efforts might well be directed.

If anything could be done to reduce the fatal-accident rate of this group to the average of the whole population, the result would be a saving of more than one-eighth of the fatal-accident toll. A corresponding saving would be effected in respect to personal injuries. No specific procedure can be suggested here, but a definite problem of first importance has been delineated. Its solution must perhaps depend on experimentation by the licensing authorities and the courts.

APPENDIX

DETAILED REPORT OF INVESTIGATION OF ACCIDENT HISTORIES OF MOTOR-VEHICLE DRIVERS

COMPREHENSIVENESS OF RECORDS, SELECTION OF DATA, AND METHOD OF SAMPLING

In Connecticut, since 1929, the operator or owner of a motor vehicle has been required by law to make to the Commissioner of Motor Vehicles a written report of any accident in which the vehicle is involved which results in personal injury or in a total damage exceeding \$25.

According to annual reports of the commissioner, only about one-fourth of the accidents which were reported prior to 1936 were voluntarily reported by the owner or operator. The commissioner receives daily reports, however, from magistrates, arresting officers and others; his office also receives daily clippings from the local newspapers of the State. If an accident is so reported indirectly, the commissioner or a deputy immediately writes to the owner or operator requiring an explanation of the fact that an accident has been alleged but not reported. This practice was initiated many years ago and has been followed consistently ever since. It is believed by the present commissioner and by his predecessor that the efficiency of the system has increased yearly. In 1935 another means of collecting information was added, namely, a law requiring all motor-vehicle repair shops to be licensed by the State, and requiring each licensee to report to the commissioner within 48 hours the license number, description, ownership, etc., of each car brought in for repairs apparently following a collision in which the damage exceeds \$25. These reports also are checked, and if the operator has not reported the accident voluntarily he is summoned as in the other instances.

There are no means of determining how efficient this system of reporting is. About 48 percent of all the reported accidents included in this experience involved death or injury to at least one person, and only 52 percent of the reported accidents involved property damage only. In some jurisdictions the reported personal-injury accidents constitute as much as 75 percent of the total. In certain public-utility companies employing hundreds of drivers through many years, the personal-injury accidents are only about 30 percent of all those accidents accruing to the company drivers which would have been reportable by law if they had occurred in Connecticut. Again, in the Chicago Park district, for the year 1936, personal-injury accidents were 29.8 percent of the total of 7,428 accidents detected. The administration of the park district believes that it has records of about 90 percent of the fatal accidents and perhaps 80 percent of the others. No certain figures can be obtained. Insurance companies do not publish the ratios which obtain among their insured drivers. Mr.

S. J. Williams of the National Safety Council, estimates that of those accidents which actually occur and which are reportable under the Connecticut law, not more than 25 percent involve personal injuries. The basis of this estimate, however, has not been published. Assuming that 30 percent of the reportable accidents involve personal casualties, one may deduce that not quite half the reportable accidents which involve property damage only are actually reported to the commissioner.

This, however, is largely speculation. It is partly offset by the fact that a certain small class of operators has about the same proportion of all classes of reported accidents.¹³ Perhaps we should go no farther than to note definitely the kind of accidents constituting the statistical population studied, and should refrain from making direct and faulty comparisons between this population and others that may be different in character or not clearly defined.

In the Connecticut records, the date of each accident, arrest, complaint, court trial, hearing before the commissioner, or conference with him, is recorded on a card bearing the driver's license number and name. These cards are kept in alphabetical order in what is known as the "master record" file. This file contains the cards of only those drivers who have been involved in accidents reported to the commissioner. If a licensed driver's name is not in that file, the reason may be either that he has kept out of trouble or that he was not driving in Connecticut in earlier years.

It was desired to obtain a large number of drivers, selected at random, whose records were known to be complete for a maximum number of years. The investigators, therefore, chose the oldest available list of applicants for renewals of operators' licenses. This was for the year 1932, all earlier lists having been destroyed in accordance with a permissive statute. Since these drivers were relicensed in 1932 they were necessarily licensed at least as early as 1931.

In the file of applicants for renewal of operator's license in 1932 were approximately 408,000 cards, one for each of these drivers, arranged in alphabetical order. Beginning with the first card the clerks recorded the name of the operator, together with all other identification data. They then counted off nine cards and chose the tenth. Thus they continued through the whole file. If the card chosen was ambiguous in any respect (e. g., as to the person's sex, which is not always indicated by the first name), the worker passed over this card and took the next card instead. She then counted off only eight intervening cards instead of nine. Such exceptions as this were very rare.

In this manner the investigators obtained a sample of 40,800 drivers. It is as nearly "random" as any sample that one could obtain. All differences of location, nationality, or race, which might be indicated by the surname, were equalized.

The workers then went to the files of applicants for renewal of operator's licenses during each year from 1933 through 1936. They checked each selected name to determine whether the operator had been licensed during every other year of the period and rejected all those names for which the record from 1931 through 1936 was incomplete. This left a net sample of 29,531 drivers who had been licensed in every year of that 6-year period.

¹³ See p. 36.

Trained workers, who had previously been employed in the department and were acquainted with its files and procedure, then took the cards for these 29,531 drivers to the master record and noted the dates of every accident, arrest, conviction, or complaint, which had engaged the attention of the Commissioner of Motor Vehicles. These data were coded and punched on tabulating-machine cards, and subjected to analysis.

COMPARISON OF ACTUAL DISTRIBUTION OF REPORTED ACCIDENTS WITH
CHANCE DISTRIBUTION

The 29,531 selected Connecticut drivers collectively reported 7,082 accidents.¹⁴ The average rate for these drivers was 0.2398 reported accidents per driver in 6 years or about one reported accident per driver in 25 years.

The adjective "reported" was reiterated in the preceding paragraph because this qualification must be emphasized in every exhibit to be considered. The annual rate of reported accidents per driver varies greatly from one population to another in the examples following herein, the highest rate being approximately 86 times the lowest. The number of reported accidents, relative to the number of actual accidents, varies according to the different populations of drivers, the various definitions of "accident," the means of detection, the rules of reporting, and the accuracy and completeness of the records. Although occasionally the adjective may be omitted for the sake of brevity, it should be borne in mind that the discussion relates to reported accidents and to them only.

It should also be clearly understood that in most of the examples considered the number of accidents per driver relates to a specified period of time, without regard to the mileage covered or to the number of hazards encountered by each driver. The fact that the accident exposure of different drivers may be different should be taken into consideration in evaluating the accuracy of conclusions.

The number of accidents which an operator has in a given time depends partly on his ineptitude or "susceptibility" to accident, and partly on the number of hazards which he encounters in that time, his "exposure." His accident rate is the product of these two factors; an insurance company, for example, would care mainly for this product and not for the manner in which the two factors entered into it.

In table 5 is shown the number of Connecticut drivers who reported, respectively, 0, 1, 2, and up to 7 accidents each. It will be noted that 23,881 drivers, or about 80.9 percent of the total, reported no accidents in the 6 years; that 4,503 drivers, 15.2 percent of the total, reported 1 accident each; that 936 drivers, 3.2 percent of the total, reported two accidents each, and so on.

¹⁴ The term "accident" as used in this report means driver accident; that is, if the same accident was reported by two or more drivers, who were involved in it, each driver is charged with one accident.

TABLE 5.—*Accidents of general drivers in Connecticut, 1931-36*

{Actual and expected distribution of accidents reported to the Commissioner of Motor Vehicles (personal casualties or property damage exceeding \$25) in a licensed-driver sample selected at random}

Accidents per operator during experience	Operators having these accidents			Accidents accruing to these operators		
	Actual number	Expected number	Difference	Actual number	Expected number	Difference
0.....	23,881	23,234	647	0	0	0
1.....	4,503	5,572	-1,069	4,503	5,572	-1,069
2.....	936	668	268	1,872	1,336	536
Total (0-2).....	29,320	29,474	-154	6,375	6,908	-533
3.....	160	53	107	480	132	348
4.....	33	4	29	132	70	62
5.....	14	3	11	70	18	52
6.....	3	1	2	18	7	11
7.....	1		1	7		7
Total (3-7).....	211	57	154	707	174	533
Total.....	29,531	29,531	0	7,082	7,082	0

$$\chi^2=746.7$$

$$P=1.6(10)^{-161}$$

The driver-population being large and the number of accidents small, the probability of any driver having an accident during the period is quite small. If (a) we have given n occurrences, each being improbable in itself, and (b) if these n occurrences are to be distributed among a population of N individuals, and (c) if the occurrences are distributed regardless of the identity of the individuals and of their individual histories, then (d) the distribution can be formulated in a law known as Poisson's series, the parameter of which is the ratio n/N . If the conditions (a) and (b) are satisfied while the law is not, then the distribution is not impartial but is subject to one or more systematic influences which remain to be determined. The determination constitutes a problem for experimental attack. According to Poisson's law, f_n , the number of individuals having n accidents each within the specified time or distance, is indicated by the expression

$$f_n = \frac{N \cdot e^{-a} \cdot a^n}{n!}$$

in which N is the total number of drivers in the sample population; $e=2.71828$, the base of the natural system of logarithms; a the number of accidents divided by the number of drivers and $n!=1.2.3. \dots n$. In the third column of the table are exhibited the values of f_n which are to be expected, according to the requirements of this law. The fourth column shows the difference which expresses the discrepancy between the actual and the expected. The symbol P at the bottom of the table denotes the probability of obtaining from an infinitely large homogeneous population a sample which misrepresented the ideal, as widely as the present sample misrepresents it or worse. This probability, \bar{P} , was computed by the chi-squared criterion, by the formulas given in Pearson's "Tables for Statisticians and Biometricians." This procedure has been followed in all the other exhibits included in this report.

From the facts presented it is clear that in this driver-population the accidents are not distributed according to the "laws of chance." On the contrary, the sample contains 647 more drivers who reported no accidents during the period than chance allows; it contains 1,069 fewer drivers reporting only 1 accident than chance allows, and has a corresponding excess of drivers reporting more than 1 accident over the number which chance allows. The probability of these discrepancies being due to chance is about 1.6 in $(10)^{161}$, the latter being a number too great to be imagined. This trait, in greater or less degree, characterizes all the other exhibits included in this section of the report except the exhibit shown in table 8.

In order to compare these findings with those of other investigators, it is necessary to describe these other populations. The study of E. G. Allen,¹⁵ summarized in table 6, was based on 10,000 drivers whose cards were taken in blocks of 100 from the files in the registrar's office in Massachusetts. The cards were in alphabetical order and those taken were fairly even through the alphabet. Of the 10,000 drivers selected, 7,793 were licensed each year from 1930 through 1933. These were selected for study, the others being eliminated. All their accidents involved death or personal injury. This accounts in part for the differences in rate, etc., between this sample population and others. It so happens that the personal accidents per driver per annum for this sample (0.0368) approximate the corresponding rate for the Connecticut population studied (0.0399). If the driver populations of Connecticut and Massachusetts could be properly regarded as mutually homogeneous, it might be suspected that the smallness of the difference in the rate is due to the fact that relatively few accidents not involving personal injury were reported to the Connecticut commissioner. There is no conclusive evidence on this point, however.

TABLE 6.—*Accidents of general drivers in Massachusetts, 1930-33*

[Actual and expected distribution of motor-vehicle accidents resulting in death or injury, in a licensed-driver sample selected at random from the files in the registrar's office]

Accidents per operator during experience	Operators having these accidents			Accidents accruing to these operators		
	Actual number	Expected number	Difference	Actual number	Expected number	Difference
0.....	6,812	6,726	86	0	0	0
1.....	848	990	-142	848	990	-142
2.....	110	73	37	220	146	74
Total (0-2).....	7,770	7,789	-19	1,068	1,136	-68
3.....	15			45		
4.....	6			24		
5.....	2			10		
Total (3-5).....	23	4	19	79	11	68
Total.....	7,793	7,793	0	1,147	1,147	0

$$\chi^2=130.5$$

$$P=4(10)^{-24}$$

The studies of Baker¹⁶ on commercial drivers and general drivers in New York State included only accidents which resulted in death or

¹⁵ Allen, E. G., Massachusetts Highway Accident Survey: Civil Works Administration and Emergency Relief Administration project, Cambridge, Massachusetts Institute of Technology, 1935.

¹⁶ Baker, J. S., Do Traffic Accidents Happen By Chance? National Safety News, vol. XX, No. 3, Sept. 1929, p. 12-14.

personal injury. This qualification is not mentioned in the original report, possibly because the author assumed it to be a matter of common knowledge. The report does not describe minutely the manner in which the population was selected, except that the sample was "random." Apparently the names were selected at random and then checked for accident reports.

As appears in table 7, the 16,700 commercial drivers collectively reported 4,360 accidents within a 3-year period. This is a rate of 0.261 reported accidents per driver, or 0.087 reported accidents per driver per annum. The 38,780 general drivers are represented in table 8. They collectively reported 5,259 accidents, giving a rate of 0.1356 accidents per driver during the 3-year period, or of 0.0452 accidents per driver per annum. These rates are approximately half the rates reported for the commercial drivers. Some may assume that the commercial drivers have more accidents per man per year than general drivers have, because the commercial drivers travel farther than the general drivers, or because they do not drive as well as the latter. There is reason for doubting the latter hypothesis; it is questionable whether the former can account for all the facts—the number of hazards encountered is not, in general, proportionate to the distance covered. It is possible that the discrepancy may be due in part to the conscientiousness of reporting, for the commercial driver-population probably includes many insured individuals and in order to protect his insurance the owner of the vehicle must report the accident to the State. Many accidents are reported for this reason which would not be reported otherwise. It should be remembered that many personal injuries have trivial consequences, if the person injured happens to be the driver himself. If there is no insurance, if there are no police officers present, and if no bystander is aggrieved, the operator may be expected to keep the facts to himself.

TABLE 7.—*Accidents of commercial drivers in New York, 3-year period*

[Actual and expected distribution of accidents reported to the Commissioner of Motor Vehicles (death or injury), in a licensed-driver sample selected at random]

Accidents per operator during experience	Operators having these accidents			Accidents accruing to these operators		
	Actual number	Expected number	Difference	Actual number	Expected number	Difference
0.....	13, 157	12, 863	294	0	0	0
1.....	2, 956	3, 358	-402	2, 956	3, 358	-402
2.....	433	438	-5	866	876	-10
Total (0-2).....	16, 546	16, 659	-113	3, 822	4, 234	-412
3.....	102	38	-----	306	114	-----
4.....	34	3	-----	136	12	-----
5.....	14	-----	-----	70	-----	-----
6.....	2	-----	-----	12	-----	-----
7.....	2	-----	-----	14	-----	-----
Total (3-7).....	154	41	113	538	126	412
Total.....	16, 700	16, 700	0	4, 360	4, 360	0

$$\chi^2 = 366.3$$

$$P = 3(10)^{-80}$$

TABLE 8.—*Accidents of general drivers in New York, 3-year period*

[Actual and expected distribution of accidents reported to the Commissioner of Motor Vehicles (death or injury), in a licensed-driver sample selected at random]

Accidents per operator during experience	Operators having these accidents			Accidents accruing to these operators		
	Actual number	Expected number	Difference	Actual number	Expected number	Difference
0.....	33,777	33,862	-85	0	0	0
1.....	4,770	4,592	178	4,770	4,592	178
2.....	213	311	-98	426	622	-196
Total (0-2).....	38,760	38,765	-5	5,196	5,214	-18
3.....	17	15		51		
4.....	3			12		
Total (3-4).....	20	15	5	63	45	18
Total.....	38,780	38,780	0	5,259	5,259	0

$$\chi^2=39.66$$

$$P=1.2(10)^{-8}$$

It will be noted that the rate per driver per annum of the personal-injury accidents reported in New York State by the general driver population (0.045) is a little higher than the rate of general accidents reported by the Connecticut population (0.0399). This comparison agrees with the hypothesis that the hazards in Connecticut are fewer or the drivers better than in the part of New York which was covered by this survey. However, it agrees just as well with the hypothesis that these New York drivers were more diligent in reporting their personal-injury accidents than were the general drivers of Connecticut, or that their police officers were more alert in detecting personal-injury accidents than were the Connecticut police.

The probability of the New York personal-injury accidents being distributed according to the laws of chance is as 12 in a billion for general drivers, and as 3 in $(10)^{80}$ for commercial drivers.

A third study by Baker¹⁷ concerned itself with 123 drivers employed by a motor-transit company in California. The experience extended through some 3 years. The criterion of "accident" is not unequivocally stated, but according to the author it disregarded the amount of property damage. The classification is made according to the number of accidents which accrued to each driver in 100,000 miles of driving.

The data are shown in table 9 and were drawn partly from the published article and were partly supplied by the author.

It is evident that these accidents are not distributed among the driver population according to the laws of chance. The misfit between the Poisson series (in the third column) and the actual series (shown in the second column) is such as would be equaled or exceeded by chance about once in 1,700,000 samples.

¹⁷ Baker, J. S., Finding the High Accident Drivers. Public Safety, vol. VII, No. 1, January 1933. pp. 20-23.

TABLE 9.—*Accidents of commercial drivers for a motor-transit company in California*

[Actual and expected distribution of motor-vehicle accidents per 100,000 miles reported to employer, regardless of personal injuries or amount of property damage]

Accidents per operator during experience	Operators having these accidents			Accidents accruing to these operators		
	Actual number	Expected number	Difference	Actual number	Expected number	Difference
0.....	14	5	9	0	0	0
1.....	15	16	-1	15	16	-1
2.....	34	25	9	68	50	18
3.....	18	27	-9	54	81	-27
4.....	11	22	-11	44	88	-44
5.....	14	14	0	70	70	0
6.....	3	8	-5	18	48	-30
Total (0-6).....	109	117	-8	269	353	-84
7.....	3	6		21		
8.....	1			8		
9.....	4			36		
10.....	3			30		
11.....	0			0		
12.....	3			36		
Total (7-12).....	14	6	8	131	47	84
Grand total.....	123	123	0	400	400	0

$$\chi^2=41.8$$

$$P=5.7(10)^{-7}$$

In the original article, the author remarks that, even though the distribution of accidents among the drivers obeyed the laws of chance, it would still be true that a small proportion of the drivers had a large proportion of the accidents, and that from this disparity alone one cannot properly conclude that the accident census among a group of drivers necessarily indicates a bad condition. This is, of course, true, as may be derived from the second and fifth columns in each of tables 1 to 9. However, in each of the cases considered it is obvious that the accident rate could be materially reduced, if a comparatively small number of high-accident drivers were eliminated and replaced by men selected at random. For example, from table 9:

Accidents accrued to 3 7-accident drivers.....	21
Accidents accrued to 1 8-accident driver.....	8
Accidents accrued to 4 9-accident drivers.....	36
Accidents accrued to 3 10-accident drivers.....	30
Accidents accrued to 3 12-accident drivers.....	36

Thus, 131 accidents, 32.8 percent of the total, accrued to 14 drivers, 11.4 percent of the population. If these 14 drivers had been somehow identified at the beginning of the experience¹⁸ and had then been replaced by 14 drivers whose rate was that of the average, namely, 3.25, the replacement men would have had among them 46 accidents instead of 131. The net gain would have been 85 accidents, or about 21 percent of the 400 accidents included in the experience.

¹⁸ An adequate means of detection remains to be developed.

A similar gain could have been made in the experience of the public utility company, shown in table 10. Of its 313 drivers, whose average rate was 2.42 accidents in 6 years, 34 drivers had among them 255 accidents at the rate of 7.5 accidents each in 6 years. If those 34 drivers could have been identified at the beginning of the experience and replaced by 34 men having the average rate of the group, namely, 2.42 accidents each, the replacement drivers would have had 82 accidents instead of 255. The net saving would have been 173 accidents, or 22.8 percent of the 758 accidents which the company's drivers accumulated in the 6 years.

In each of the two instances cited, the men pointed out for replacement have accident rates about three times as high as the rate for the group as a whole. Each of the 313 drivers shown in table 10 worked for the company throughout the period of 6 years. The second and third columns of the table show that this collection contains nearly three times as many accident-free men as the law of chance permits; that it has a deficiency of men whose rate is from one-half to one and one-half times the average rate of 2.42, and a relatively great excess of drivers whose rate exceeds six accidents each.

TABLE 10.—*Accidents of drivers of trucks and passenger cars for a public-utility company, 1930-35*

[Actual and expected distribution of motor-vehicle accidents of drivers employed continuously for the period, as reported to employer or detected by supervisors, regardless of personal injuries or amount of property damage]

Accidents per operator during experience	Operators having these accidents			Accidents accruing to these operators		
	Actual number	Expected number	Difference	Actual number	Expected number	Difference
0.....	81	28	53	0	0	0
1.....	44	67	-23	44	67	-23
2.....	68	81	-13	136	162	-26
3.....	41	66	-25	123	198	-75
4.....	25	40	-15	100	160	-60
5.....	20	19	1	100	95	5
Total (0-5).....	279	301	-22	503	682	-179
6.....	13	8	5	78		
7.....	7	3	4	49		
8.....	5	1	4	40		
9.....	4		4	36		
10.....	3		3	30		
11.....	2		2	22		
Total (6-11).....	34	12	22	255	76	179
Grand total.....	313	313	0	758	758	0

$$\chi^2=165.8$$

$$P=3.5(10)^{-33}$$

Study of the annual records of this company (which unfortunately were not at hand while this report was being written) was convincing that the majority of these high-accident drivers could have been segregated by their accident records alone at the end of the second year. Unfortunately, in a commercial organization it is difficult to keep the conditions of such a study constant. If the number of employees is large, and if the management is informed of the trend of the results,

then it is likely to act on the information and dismiss or transfer to nondriving duties those men whose records stigmatize them as offering the greatest risks. This action, of course, modifies the driver-population that is being studied and alters the final result. In this driver population, some such modifications occurred, the tendency being to eliminate (by transfer rather than by discharge) some employees whose records were at least as bad as those of the tail end of this group. This may account in part for some irregularities in the trends of the distribution.

To ascertain how valuable a complete set of accident records may become, one must turn to a large population of drivers which has not been disturbed as it would be disturbed in a highly organized commercial institution. There is reason for believing that the driver population in one of the departments of the Government would lend itself well to such a study, if support can be found for it in the future.

The exhibit of Slocombe and Brakeman (table 11) covers the accident records of 2,300 operators of the Boston Elevated system through the year 1927. (This information was derived from correspondence with Dr. Slocombe.) The average rate for this population is high, being 3.129 accidents per driver per annum. However, a public carrier has to record all accidents, no matter how trivial, even though they may involve nothing worse than a passenger being slightly bumped or shaken. This rate cannot be directly compared with the rates of any other population that is shown here. This distribution departs further from the ideal than any other which we have considered, the probability that the misfit is due to chance being of the order of $(10)^{-217}$. The computation of such small probability values is, of course, a luxury. A probability as small as one in 10,000, or $(10)^{-4}$, could be interpreted to mean that one should not find more than one such sample by chance in as many samples as he could collect and examine in a lifetime.

This distribution is especially interesting because of its length. The population is not homogeneous. It is permissible to regard the distribution as containing one component in which the number of operators is 75, the average number of accidents per driver per annum is 10, and the total number of accidents 750. If this distribution were Poissonian it would run about as follows:

Number of operators	Accidents per annum	Annual number of accidents	Number of operators	Accidents per annum	Annual number of accidents
2-----	14	6	7-----	12	84
3-----	5	15	5-----	13	65
5-----	6	30	4-----	14	56
7-----	7	49	3-----	15	45
8-----	8	64	2-----	16	32
9-----	9	81	2-----	¹ 17	34
9-----	10	90			
9-----	11	99	Total, 75-----		750

¹ Or fewer.

² Or more.

TABLE 11.—*Accidents of operators of electric railway cars and motor busses for the Boston Elevated System, 1927*

[Actual and expected distribution of motor-vehicle accidents of operators employed continuously throughout the year, as reported to employer, regardless of personal or property damage]

Accidents per operator during experience	Operators having these accidents			Accidents accruing to these operators		
	Actual number	Expected number	Difference	Actual number	Expected number	Difference
0.....	217	101	116	0	0	0
1.....	326	315	11	326	315	11
2.....	569	493	76	1,138	986	152
3.....	458	514	-56	1,374	1,542	-168
4.....	258	402	-144	1,032	1,608	-576
5.....	145	252	-107	725	1,260	-535
6.....	99	131	-32	594	786	-192
7.....	86	59	27	602	413	189
8.....	46	23	23	368	184	184
Total (0-8).....	2,204	2,290	-86	6,159	7,094	-935
9.....	27	-----	-----	243	-----	-----
10.....	24	-----	-----	240	-----	-----
11.....	24	-----	-----	264	-----	-----
12.....	7	-----	-----	84	-----	-----
13.....	5	-----	-----	65	-----	-----
14.....	2	-----	-----	28	-----	-----
15.....	2	-----	-----	30	-----	-----
16.....	2	-----	-----	32	-----	-----
17.....	2	-----	-----	34	-----	-----
18.....	1	-----	-----	18	-----	-----
Total (9-18).....	96	10	86	1,038	103	935
Total.....	2,300	2,300	0	7,197	7,197	0

$$\chi^2 = 1,031.2$$

$$P = 4(10)^{-217}$$

This hypothesis accounts for the "tail" of the original distribution, which includes all those operators who had at least 12 accidents each during the year. Thus, we may consider that 75 operators out of 2,300 constituting 3.2 percent of the total number, together had 750 accidents, or 10.4 percent of the total, which is 7,197 accidents.

Of this whole group of 75 men only 21, according to the hypothesis, are identified. These are the individuals who according to table 11 had not less than 12 accidents each during the year. Together they had 291 accidents, or 4.04 percent of the total number, they themselves constituting only nine-tenths of 1 percent of the total population of drivers. According to this hypothesis, however, if we should eliminate only these 21 men, there would remain in the "stump" of the original population 54 drivers whose average rate "in the long run" would also be 10 accidents per driver per annum. We should therefore expect that if enough time were allowed them, they also would exhibit their proclivity to accidents.

In 1932, C. S. Slocombe obtained two populations of general drivers in Connecticut for a study conducted by the Yale University Institute of Human Relations and reported to the National Bureau of Casualty and Surety Underwriters, which lent financial aid to the investigators. The first population consisted of 2,089 insured general drivers. The investigators obtained their names from the companies in which they were insured, along with their accident histories. The investigators then checked these records with the records in the department of motor vehicles. They found that both sets of records were incomplete,

each office having some information which the other office lacked and lacking some information which the other office had. This population is selected, all the drivers being insured against property damage which they might cause to others and against liability for personal injury. The definition of "accident" varied, as did the definition of "reportable accident" in Connecticut during the years in question. From 1926 to 1929 the law required all accidents to be reported which caused death or injury to any person, or which resulted in property damage apparently exceeding \$10. In 1929 the property damage minimum was raised from \$10 to \$25. This change soon resulted in a reduction in the number of accidents reported per annum, which has been falsely interpreted as being due to improvement in the behavior of drivers or else to laxity in reporting and recording. The principal cause seems to have been merely a change in the standard of reportability. The author did not apply the later standard to the earlier part of the experience, hence the standard is nonuniform. The distribution of accidents per driver during this 5-year period is shown in table 12.

TABLE 12.—*Accidents of insured general drivers in Connecticut, 1926-30*

[Actual and expected distribution of motor-vehicle accidents resulting in personal casualties or property damage exceeding \$10, as reported to insurance company or Commissioner of Motor Vehicles, by drivers licensed continuously from 1926 through 1930]

Accidents per operator during experience	Operators having these accidents			Accidents accruing to these operators		
	Actual number	Expected number	Difference	Actual number	Expected number	Difference
0.	901	561	340	0	0	0
1.	549	737	-188	549	737	-188
2.	276	485	-209	552	970	-418
3.	164	213	-49	492	639	-147
4.	79	70	9	316	280	36
5.	41	18	23	205	90	115
Total (0-5).....	2, 010	2, 084	-74	2, 114	2, 716	-602
6.	28	4	-----	168	24	-----
7.	17	1	-----	119	7	-----
8.	10	-----	-----	80	-----	-----
9.	7	-----	-----	63	-----	-----
10.	4	-----	-----	40	-----	-----
11.	5	-----	-----	55	-----	-----
12.	8	-----	-----	108	-----	-----
Total (6-12)	79	5	74	633	31	602
Total.....	2, 089	2, 089	0	2, 747	2, 747	0

$$\chi^2=1,481$$

$$P=7(10)^{-317}$$

The same author also obtained the records of 5,000 general drivers¹⁹ in the following manner: From the drivers' cards as arranged in alphabetical order in the commissioner's license files, approximately 200 consecutive cards were extracted from each section of the alphabet. The records were next searched to determine whether the drivers thus selected had driven continuously throughout the 5-year period. Those drivers whose records were defective were eliminated from consideration. The accident-frequency distribution among the re-

¹⁹ This information is not contained in the original report but was supplied by the author.

maining drivers, reduced to a basis of 5,000, is shown in table 13. It will appear from tables 8 and 9 that the rates in these two populations differ widely, the insured drivers reporting about 2.25 times as many accidents per driver per annum as the general population.

TABLE 13.—*Accidents of general drivers in Connecticut, 1926-30*

[Actual and expected distribution of accidents reported to the Commissioner of Motor Vehicles (personal casualties or property damage exceeding \$10), in a licensed-driver sample selected at random]

Accidents per operator during experience	Operators having these accidents			Accidents accruing to these operators		
	Actual number	Expected number	Difference	Actual number	Expected number	Difference
0-----	3, 140	2, 794	346	0	0	0
1-----	1, 202	1, 626	-424	1, 202	1, 626	-424
2-----	423	473	-50	846	946	-100
3-----	155	92	63	465	276	189
Total (0-3)-----	4, 920	4, 985	-65	2, 513	2, 848	-335
4-----	50	13	-----	200	-----	-----
5-----	15	2	-----	75	-----	-----
6-----	5	-----	-----	30	-----	-----
7-----	3	-----	-----	21	-----	-----
8-----	2	-----	-----	16	-----	-----
9-----	3	-----	-----	27	-----	-----
10-----	1	-----	-----	10	-----	-----
11-----	-----	-----	-----	-----	-----	-----
12-----	-----	-----	-----	-----	-----	-----
13-----	-----	-----	-----	-----	-----	-----
14-----	-----	-----	-----	-----	-----	-----
15-----	-----	-----	-----	-----	-----	-----
16-----	-----	-----	-----	-----	-----	-----
17-----	1	-----	-----	17	-----	-----
Total (4-12)-----	80	15	65	396	61	335
Total-----	5, 000	5, 000	0	2, 909	2, 909	0

$$\chi^2 = 483.5$$

$$P = 2.5(10)^{-103}$$

These two groups are not mutually exclusive, although the author does not indicate how many individuals were common to the two. It is probable that a population made up of noninsured drivers would differ from a population of insured drivers still more widely than does this sampling from the general population. The reader may wonder whether the discrepancies in rate are due to poorer driving or to more faithful reporting on the part of insured individuals. As in the other samples here presented, so in these, the distributions of accidents in the population contradict the hypothesis of equal liability. The probability of that hypothesis being satisfied is infinitesimal, varying from $(10)^{-103}$ to $(10)^{-316}$. The significance of the deviations of these series from the corresponding Poissonian series has been discussed in detail by Newbold²⁰ and also by Greenwood and Yule.²¹

CONSISTENCY OF PERSONAL HISTORIES

Table 14 gives a comparison between the number of accidents which accrued to each of the Connecticut operators in the years 1931-33 and with those of the years 1934-36. Of the 26,259 drivers

²⁰ Newbold, E. M., A Contribution to the Study of the Human Factor in the Causation of Accidents. Industrial Fatigue Research Board, No. 34: H. M. Stationery Office, London, 1926.

²¹ Greenwood, M. and Yule, G. U., An Inquiry Into the Nature of Frequency Distributions Representative of Multiple Happenings, etc., Journal Royal Statistical Society, vol. 83, pt. 2, March 1920, pp. 255-279.

who went accident-free in 1931-33, the records of 1934-36 show that 2,117 had one accident each; 242 had two accidents each; 17 had three accidents each; 2 had four accidents each. The 1934-36 histories of the other classes of 1931-33 drivers appear in the other columns of that table.

Table 15 shows certain other relations among these operators. For example, the total number of accidents accruing in 1934-36 to the accident-free drivers of 1931-33 was 2,660 or 0.101 accidents per driver. The other lines of the table show the corresponding distributions of accidents among the other classes of 1931-33 drivers. Note that those who had one accident each in 1931-33 had, in 1934-36, 1.97 times as many accidents per driver as those who went accident-free during the earlier period. The column headed " P_D " refers to the number of accidents per operator in the next preceding column and denotes the probability of each of those values being a chance deviation from the first value shown in the column. The column headed "Relative risk" relates 1934-36 accidents per operator to the 1934-36 rate of those operators who went accident-free in 1931-33.

TABLE 14.—*Accidents of general drivers in Connecticut in years 1934-36 compared with those of the same drivers in years 1931-33*

[Distribution of drivers in accordance with number of motor-vehicle accidents in each period reported to the Commissioner of Motor Vehicles, in a licensed-driver sample selected at random]

Accidents per operator, 1934-36	Accidents accruing to same operators, 1931-33					Total number of operators
	0	1	2	3	4	
0-----	23,881	2,386	275	22	5	26,569
1-----	2,117	419	64	5	4	2,609
2-----	242	57	12	2	0	313
3-----	17	9	5	2	1	34
4-----	2	3	1	0	0	6
Total-----	26,259	2,874	357	31	10	29,531

TABLE 15.—*Accidents of general drivers in Connecticut in years 1934-36 compared with those of the same drivers in years 1931-33*

[Average accidents per operator reported to the Commissioner of Motor Vehicles in the later period, for operators grouped in accordance with the number of accidents reported by each in the earlier period, in a sample selected at random]

Accidents per operator, 1931-33	Number of operators	Number of accidents reported by same operators, 1934-36	Accidents per operator 1934-36	P_D	Relative risk
0-----	26,259	2,660	0.101	-----	1.00
1-----	2,874	572	.199	(10) ⁻²⁴	1.97
2-----	357	107	.300	8(10) ⁻¹³	2.97
Total (0-2)-----	29,490	3,339	.113	-----	1.12
3-----	31	15	.484	3(10) ⁻²	4.79
4-----	10	7	.700	2(10) ⁻²	6.93
Total (3-4)-----	41	22	.537	8(10) ⁻⁴	5.31
Total-----	29,531	3,361	.114	-----	1.13

In 1934-36, the 0-accident men of 1931-33 had 0.101 accidents per operator, while the 1-accident men of 1931-33 had 0.199 accidents per operator. According to the values shown in the column headed " P_D " the difference (0.199 minus 0.101, or 0.098) would occur by chance once in about $(10)^{24}$ or a trillion trillion samples. The other differences implied in this table are not as dependable as this difference. One reason, perhaps a sufficient reason, is that the high-accident men of 1931-33 were few in number. This alone operates to increase the uncertainty of the differences and also the ratios. Nevertheless, there is justification for stating that any large group of operators who go accident-free during a reasonably long period will collectively have fewer accidents during another reasonably long period of comparable operation than any other class of operators will have.

This assertion is verified and intensified by another table now to be considered. It is not enough to show that those operators who have a higher accident rate in one period also have a higher accident rate in a later period—it is necessary for some purposes to show that the converse relationship also holds. Table 16 shows the accidents per operator in 1931-33 of those operators who had 0, 1, 2, or more accidents in 1934-36. Here it appears that the accident-free operators in 1934-36 had among them only half as many accidents in 1931-33 as the 1-accident operators of 1934-36 had in the earlier period.

TABLE 16.—*Accidents of general drivers in Connecticut in years 1931-33 compared with those of same drivers in years 1934-36*

[Average accidents per operator reported to the Commissioner of Motor Vehicles in the earlier period for operators grouped in accordance with the number of accidents reported by each in the later period, in a sample selected at random]

Accidents per operator, 1934-36	Number of operators	Number of accidents reported by same operators, 1931-33	Accidents per operator, 1931-33	P_D	Relative risk
0	26,569	3,022	0.114		1.00
1	2,609	578	.222	$2(10)^{-20}$	1.95
2	313	87	.278	$2(10)^{-8}$	2.44
Total (0-2)	29,491	3,687	.125		1.10
3	34	29	.852		7.47
4	6	5	.833		7.30
Total (3-4)	40	34	.850	$4(10)^{-6}$	7.45
Total	29,531	3,721	.126		1.11

As in the table which showed the converse relationship, the probability that the difference between the 1931-33 averages of the accident-free operators of 1934-36 is due to chance is in every instance negligibly small. Thus, it is apparent that not only can these group-experiences of the future be predicted from similar experiences in the past, but their experiences in a remote past can be estimated from their experiences in the less remote past.

These two tables alone suggest that an employer or administrative officer can make a definite and almost certain use of the accident rates of classified groups of operators.

C. S. Slocombe, in an unpublished report entitled "The Statistics of Differential Rating," which he prepared for an association of accident-insurance companies, has based an expectancy table on a similar comparison, using a brief experience to predict actual losses through the next 4 years thereafter. His sample is smaller than the one just considered, and the basis of his prediction is correspondingly less certain; nevertheless, the principle which he employs seems to be fundamentally sound.

Tables 17 and 18, based on a 5-year experience of the public utility company previously referred to in table 10, show that similar relations hold even among small numbers of classified drivers, if the experience is reasonably long or the group accident rates are reasonably high. The headings of the last two columns in these tables have the same meaning as in tables 15 and 16.

TABLE 17.—*Accidents of drivers for public-utility company in years 1933-34 compared with those of same drivers in years 1930-32*

[Average motor-vehicle accidents per operator in the later period, for operators grouped in accordance with the number of motor-vehicle accidents accruing to each in the earlier period]

Accidents per operator, 1930-32	Number of operators	Accidents among same operators, 1933-34	Accidents per operator, 1933-34	P_D	Relative risk
0.....	104	43	0.41	-----	1.00
1.....	79	50	.63	$2(10)^{-2}$	1.54
2.....	57	49	.86	$8(10)^{-3}$	2.10
3.....	43	37	.86	$2(10)^{-3}$	2.10
4 and more.....	20	20	1.00	$(10)^{-10}$	2.44
Total.....	303	199	-----	-----	-----

TABLE 18.—*Accidents of drivers for public-utility company in years 1930-32 compared with those of same drivers in years 1933-34*

[Average motor-vehicle accidents per operator in the earlier period, for operators grouped in accordance with the number of motor-vehicle accidents accruing to each in the later period]

Accidents per operator, 1933-34	Number of operators	Accidents among same operators, 1930-32	Accidents per operator, 1930-32	P_D	Relative risk
0.....	164	174	1.06	-----	1.00
1.....	89	144	1.62	$5(10)^{-3}$	1.53
2.....	40	73	1.83	$2(10)^{-3}$	1.73
3 and more.....	10	17	1.70	$4(10)^{-3}$	1.60
Total.....	303	408	-----	-----	-----

Evidence has been supplied by this company which shows that those drivers who collectively had many traffic accidents in a given period also had among them an unduly large number of personal accidents during the same period. "Personal accidents" included not only those which occurred as the result of collisions in traffic, although these constituted an appreciable fraction of the total number. The larger proportion, however, were accidents which occurred in daily work not directly connected with driving; for example, many of these drivers were repairmen. Many of their accidents were caused by

falling off their trucks; by dropping tools on their toes or other parts of the body; by mashing, burning, or cutting fingers; in general, accidents due to personal clumsiness. Many of these accidents were, of course, trivial, but they had to be reported in order to protect the employer against claims under the Workmen's Compensation Act and to protect the company's liability insurance. Tables 19 and 20 show not only that proneness to traffic accidents can be inferred from proneness to personal accidents but that the converse relation holds.

INTERVALS BETWEEN ACCIDENTS

Table 21 shows that the maximum lengths of 1,428 intervals between accidents which accrued to all classes of accident repeaters.

TABLE 19.—*Personal accidents of drivers for public utility company compared with motor-vehicle accidents of same drivers, 1930-35*

[Average personal accidents per operator for operators grouped in accordance with the number of motor-vehicle accidents each, in the same period]

Number of motor-vehicle accidents per operator, 1930-35	Number of operators	Number of personal accidents to same operators	Personal accidents per operator	P_D	Relative risk
0	81	62	0.765	-----	1.00
1	44	56	1.273	$3(10)^{-3}$	1.66
2	68	117	1.721	$2(10)^{-5}$	2.25
3	41	92	2.222	$2(10)^{-3}$	2.91
4	25	55	2.200	$7(10)^{-5}$	2.87
5 and more	54	138	2.556	$2(10)^{-9}$	3.34
Total	313	520	-----	-----	-----

TABLE 20.—*Motor-vehicle accidents of drivers for public-utility company compared with personal accidents of same drivers, 1930-35*

[Average motor-vehicle accidents per operator for operators grouped in accordance with the number of personal accidents each, in the same period]

Number of personal accidents per operator, 1930-35	Number of operators	Number of motor-vehicle accidents to same operators	Traffic accidents per operator	P_D	Relative risk
0	109	141	1.29	-----	1.00
1	73	180	2.47	$5(10)^{-5}$	1.91
2	43	118	2.74	$3(10)^{-5}$	2.12
3	44	156	3.50	$2(10)^{-9}$	2.71
4	16	60	3.75	$3(10)^{-4}$	2.91
Total (0-4)	285	655	2.29	-----	1.78
5	12	36	3.00	-----	2.33
6	11	40	3.63	-----	2.81
7 and more	5	27	5.40	$5(10)^{-5}$	4.15
Total (5 and more)	28	103	3.67	-----	-----
Grand total	313	758	-----	-----	-----

TABLE 21.—*Intervals between accidents of general-driver accident repeaters in Connecticut, 1931-36*

[Number and percent of intervals in groups based on maximum interval lengths, for drivers reporting 2 or more accidents in the 6-year period, in a licensed-driver sample selected at random]

Interval	Number of intervals	Percent of total number of intervals	Interval	Number of intervals	Percent of total number of intervals
Less than—			Less than—		
1 month.....	38	2.7	24 months.....	960	67.2
2 months.....	88	6.2	30 months.....	1,098	76.9
3 months.....	149	10.4	36 months.....	1,203	84.2
6 months.....	347	24.3	48 months.....	1,332	93.3
9 months.....	466	32.6	60 months.....	1,408	98.6
12 months.....	602	42.2	70 months.....	1,428	100.0
18 months.....	790	55.3			

Of these intervals, 38, or 2.7 percent of the total number tabulated, were less than 1 month; 88 intervals, or 6.2 percent, were less than 2 months, and so on. This distribution in itself is not very informative in respect to the personal habits of the accident-repeaters. Table 22, however, shows the intervals between the first and second accident in relation to the intervals between the second and third accidents of 191 operators who had three or four accidents each within the experience. Tables 23, 24, and 25 show the intervals between the first, second, third, and fourth accidents, in relation to each other, for 52 operators who had at least four accidents each within the experience.

These tables show a low correlation of the Pearsonian type, but that is a minor feature of the comparison. In each instance a large proportion of the total number of intervals is short. Thus, the horizontal row of totals at the bottom of table 18 shows that, of the 191 intervals between first and second accidents, 36 intervals, or 18.8 percent, were not more than 3 months, while 62 intervals, or 32.5 percent, were not more than 6 months. Inspection of all the rows and columns representing the totals in tables 22 to 25 shows a similar picture. Its meaning is that for several months immediately following an accident the operator is more liable to accidents than he was before or will be later. This fact may account for the discrepancies between the frequency distributions of accidents among the driving population and the corresponding Poissonian distributions.

TABLE 22.—*Intervals between accidents of 3- and 4-accident general drivers in Connecticut, 1931-36*

[Intervals between first and second accidents in relation to the interval between the second and third accidents for drivers reporting 3 or 4 accidents in the 6-year period, in a licensed-driver sample selected at random]

Months between the second and third accidents	Months between the first and second accidents																				Total
	1 to 3	4 to 6	7 to 9	10 to 12	13 to 15	16 to 18	19 to 21	22 to 24	25 to 27	28 to 30	31 to 33	34 to 36	37 to 39	40 to 42	43 to 45	46 to 48	49 to 51	52 to 54	55 to 57	58 to 60	
49 to 51.....					2																2
46 to 48.....						1	1														2
43 to 45.....		1		1	1																3
40 to 42.....	1		1	1			1			1											5
37 to 39.....	1	1	1	1			1														5
34 to 36.....	1	2		1																	4
31 to 33.....	1			1		1				1											4
28 to 30.....	3	1	1	2		1	1		1												10
25 to 27.....	2	3		2				1		1											9
22 to 24.....	3	1	1	2	2	1		1													11
19 to 21.....	1	3	3	1							1					1					11
16 to 18.....	2			2	1	5	1			2											13
13 to 15.....	5	4	2	2	3		1	1	1			2				1					21
10 to 12.....	4	2	2	2	1		2	1		3	1		1								20
7 to 9.....	2	1	2			1	1	1	2	1		1	2			1	1	1			17
4 to 6.....	4	4	1		2	4	2	2	1	1	3					1				1	25
1 to 3.....	6	3	4		1	1	2	4	2	1	2		1	1		1					29
Total.....	36	26	18	19	12	16	13	11	7	11	7	3	4	1	2	2	1	1	0	1	191

TABLE 23.—*Intervals between accidents of 4-accident general drivers in Connecticut, 1931-36*

[Intervals between first and second accidents in relation to the interval between the second and third accidents, for drivers reporting 4 or more accidents in the 6-year period, in a licensed-driver sample selected at random]

Months between the second and third accidents	Months between the first and second accidents																		To- tal
	1 to 3	4 to 6	7 to 9	10 to 12	13 to 15	16 to 18	19 to 21	22 to 24	25 to 27	28 to 30	31 to 33	34 to 36	37 to 39	40 to 42	43 to 45	46 to 48	49 to 51	52 to 54	
40 to 42.....	1			1															2
37 to 39.....			1																1
34 to 36.....																			0
31 to 33.....																			0
28 to 30.....	1	1		1															3
25 to 27.....	1	1		1															3
22 to 24.....		1			1		1												3
19 to 21.....	1	1	2			1													5
16 to 18.....		1				1													2
13 to 15.....	1				1				1										3
10 to 12.....	2	2	1	1			1			1			1						9
7 to 9.....	1	1			1	1												1	5
4 to 6.....		2	1			1		1		1									6
1 to 3.....	1	2	4	1					1					1					10
Total.....	9	12	9	5	3	4	2	1	2	2	0	0	1	1	0	0	0	1	52

TABLE 24.—*Intervals between accidents of 4-accident general drivers in Connecticut, 1931-36*

[Intervals between second and third accidents in relation to the interval between the third and fourth accidents, for drivers reporting 4 or more accidents in the 6-year period, in a licensed-driver sample selected at random]

Months between third and fourth accidents	Months between second and third accidents															Total
	1 to 3	4 to 6	7 to 9	10 to 12	13 to 15	16 to 18	19 to 21	22 to 24	25 to 27	28 to 30	31 to 33	34 to 36	37 to 39	40 to 42		
46 to 48.....	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
43 to 45.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	
40 to 42.....	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	
37 to 39.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	
34 to 36.....	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1	
31 to 33.....	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1	
28 to 30.....	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
25 to 27.....	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	
22 to 24.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	
19 to 21.....	—	1	1	1	—	—	1	—	—	—	—	—	—	—	4	
16 to 18.....	1	1	1	—	—	—	—	1	—	—	—	—	—	—	4	
13 to 15.....	—	—	—	1	1	—	—	—	—	—	—	—	—	—	2	
10 to 12.....	—	1	1	1	1	—	—	—	—	1	—	—	—	—	4	
7 to 9.....	2	—	2	1	1	—	2	—	1	1	—	—	—	—	10	
4 to 6.....	—	—	—	1	1	2	2	1	1	—	—	—	—	—	8	
1 to 3.....	5	1	—	2	—	—	—	1	1	1	—	—	1	2	14	
Total.....	10	6	5	9	3	2	5	3	3	3	0	0	1	2	52	

TABLE 25.—*Intervals between accidents of 4-accident general drivers in Connecticut, 1931-36*

[Intervals between first and second accidents in relation to the interval between the third and fourth accidents, for drivers reporting 4 or more accidents in the 6-year period, in a licensed-driver sample selected at random]

Months between the third and fourth accidents	Months between first and second accidents																		Total
	1 to 3	4 to 6	7 to 9	10 to 12	13 to 15	16 to 18	19 to 21	22 to 24	25 to 27	28 to 30	31 to 33	34 to 36	37 to 39	40 to 42	43 to 45	46 to 48	49 to 51	52 to 54	
46 to 48.....	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1
43 to 45.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0
40 to 42.....	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1
37 to 39.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0
34 to 36.....	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1
31 to 33.....	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1
28 to 30.....	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1
25 to 27.....	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	1
22 to 24.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0
19 to 21.....	1	---	---	---	---	2	---	---	---	1	---	---	---	---	---	---	---	---	4
16 to 18.....	2	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4
13 to 15.....	1	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	2
10 to 12.....	---	1	1	---	---	---	---	---	---	---	---	---	1	---	---	---	---	1	4
7 to 9.....	---	4	1	1	1	2	1	---	---	---	---	---	---	1	---	---	---	---	10
4 to 6.....	1	1	1	2	1	1	---	---	1	---	---	---	---	---	---	---	---	---	8
1 to 3.....	4	1	4	2	---	---	1	1	1	---	---	---	---	---	---	---	---	---	14
Total.....	9	12	9	5	3	4	2	1	2	2	0	0	1	1	0	0	0	1	52

THE CONTRIBUTION OF ACCIDENT REPEATERS TO THE ACCIDENT TOTAL

The question arises: Do accident repeaters contribute more accidents of certain types than of other types?

To answer this question the 7,082 accidents were segregated according as they caused death, personal injuries without death, or property damage without personal casualties. The distribution appears in table 26.

It will be seen that the accident repeaters had a slightly larger proportion of the fatal accidents than of the other types, but the numbers are too small to make the differences highly significant.

C. S. Slocombe, in *The Statistics of Differential Rating*, points out that his accident repeaters as a class caused more property damage per accident than his nonrepeaters caused. The plan of the present study provided for a similar break-down but it was physically impossible to accomplish it in the limited time available prior to submitting this report.

TABLE 26.—*Accidents involving accident repeaters, by type of accident*

Accident classification	All accidents	Accidents accruing to repeaters	
		Number	Percent of total
Fatal.....	133	53	39.8
Nonfatal, personal.....	3,233	1,138	35.2
Nonpersonal.....	3,716	1,388	37.4
Total.....	7,082	2,579	36.4

The problem of the accident repeater is by no means trivial. In the study by Allen, for example, represented in table 6, the repeaters contributed more personal accidents by far than the laws of chance allow; but since the repeaters were few in number in this sample their absolute contribution was not heavy. This fact has been misinterpreted as indicating that, in general, accident repeaters contribute only a small part of the public damage. This conclusion does not follow from the facts. Allen considered only personal-injury accidents, and those through only 4 years. The rate for this kind of accident is small; the experience is brief; hence, the accident repeaters did not have enough time to demonstrate their proneness. This instance illustrates how widely a set of facts can become distorted by being presented without regard to certain intrinsic relations among them. This is very likely to happen when information is derived from abstracts or from secondary sources. Allen's results actually are fully consistent with those obtained in this study. They do not fall into the same pattern as the results of Baker shown in table 8. This discrepancy may be caused by the manner of collecting the basic data, and not by the facts themselves.

ACCIDENTS IN RELATION TO THE DRIVER'S AGE

In taking this sample from the Connecticut records, the investigators classified the drivers according to their reported years of birth.

The published reports on the influence of age are very scanty. Most of the States group together those drivers who are under 20, and group

by decades or larger classes the ages of older drivers. This practice has concealed certain very important relations illustrated in this present report.

Attention was called to the problem in an unpublished report entitled, "The Driver of the Motor Vehicle as a Factor in Highway Accidents," compiled by the Massachusetts Highway-Accident Survey, a Civil Works Administration and Emergency Relief Administration project. This report was submitted in 1934 by Mr. John R. Nichols, engineer, to Col. Robert C. Eddy, director of the survey. It gives the age distribution by sexes of 10,000 drivers in Massachusetts licensed in 1933. The sample was selected by a method which might be called random. From the card catalog of licensed drivers, arranged in alphabetical order, 100 samples of 100 cards each were taken at approximately equal intervals in the catalog. The ages of these drivers were noted. In the same year 786 licensed drivers in Massachusetts were involved in fatal accidents. If we divide this number by 10,000 and multiply the quotient by the number in each age group in this sample of 10,000, we find the number of fatal accidents which should have accrued to the drivers in each age group, if this sample is typical and if the distribution of accidents is independent of age. The result appears in table 27.

TABLE 27.—Comparison of actual with expected number of drivers of different ages involved in fatal accidents in Massachusetts, 1933

Age	Number of drivers		Difference	Ratio, actual number to expected number	Age	Number of drivers		Difference	Ratio, actual number to expected number
	Actual	Expected ¹				Actual	Expected ¹		
16 to 20.....	95	61	34	1.56	51 to 55.....	23	48	-25	0.48
21 to 25.....	163	110	53	1.48	56 to 60.....	24	38	-14	.63
26 to 30.....	122	122	0	1.00	61 to 65.....	19	24	-5	.79
31 to 35.....	109	111	-2	.98	66 and over.....	17	18	-1	.94
36 to 40.....	90	104	-14	.87					
41 to 45.....	69	86	-17	.80	Total.....	786	786	0	1.00
46 to 50.....	55	64	-9	.86					

¹ Estimated from a sample of 10,000 licensed drivers selected at random.

$$\chi^2 = 70.32$$

$$P = 3.8(10)^{-11}$$

The number of individuals involved in these fatal accidents being small, the data have been grouped in 5-year classes, beginning with age 16. Here we must remark that some difference in the apparent trend results from the manner in which the data are grouped. In this sample, the licensed drivers under 18 constituted only 1.78 percent of the population of licensed drivers. However, these and comparable data have been grouped in various ways, and it appears that the present grouping overemphasizes none of the facts and that it suppresses no genuine trends in the population. The age groups of drivers are shown in the first column of the table. The second column shows the number of drivers involved in fatal accidents in 1933.²² The third column shows the number to the nearest integer which would be required by chance, i. e., if accidents occurred in each age group in proportion to its numbers. The fourth column shows the discrepancy between the

²² The unit here is actually the "driver-accident" or "driver-involvement", i. e., a driver involved in 2 fatal accidents is counted twice, and similarly, an accident involving 2 drivers is charged to each.

actual number and the expected number of fatal accidents in each age group. The fifth column shows the ratio of the actual number to the expected number. Thus, for example, the first row of the table shows that 95 drivers, 16 to 20 years old, had fatal accidents, whereas chance allows but 61. The actual number of fatal-accident drivers is, therefore, 1.56 times the expected number. Again, the second line of the table shows that 163 drivers, 21 to 25 years old, were involved in fatal accidents, whereas chance allows but 110. The actual number of fatal-accident drivers in this group is, therefore, 1.48 times the expected number. The age group 51 to 55 years of age, on the other hand, included only 23 fatal-accident drivers, whereas chance required 48. Thus, the number of fatal-accident drivers in this age group is only 0.48 times the expected number.

Some readers might suspect that these discrepancies are due in part to the small number of individuals involved. To satisfy this scruple, the chi-squared criterion has been employed to determine the probability of these discrepancies being jointly due to chance. This criterion takes account of the number of individuals in each age group. Where the expected number of individuals was less than five, the procedure recommended by R. A. Fisher was followed and the data were grouped into larger classes. This was necessary only for ages 66 and over. According to this criterion, the probability of obtaining by chance such a misfit as this to an ideal distribution is approximately $3.8(10)^{-11}$. As mentioned above, the computation of the value of P , where the value is obviously small, is a mere luxury. The value is shown here to emphasize that even in this small sample the implied facts point to the existence of a genuine problem. The two youngest-age groups have an enormous excess of fatal accidents, while the drivers of advanced middle age have a corresponding deficiency. It is the excessive rate in the two younger-age groups which accounts for most of the discrepancy between the expected and the actual.

More recently the Department of Motor Vehicles of Massachusetts has published the age distribution of fatal-accident drivers for the years 1934 and 1935, and also a combination for the years 1928, 1932, and 1933. It has also published a distribution, by ages, of 15,000 operators, made several years ago. Further details are not given in the information sent to the Highway Research Board. Tables 28, 29, and 30 give these distributions in comparison with an expected distribution based on this sampling of 15,000 operators. The tables indicate a trend very similar to that of 1933. In every instance the drivers in the two lowest age groups have far more fatal accidents than should be expected from this estimate of their numerical strength.

The principal difficulty which attends an exact interpretation of the result lies in an assumption, namely, that the distribution of drivers of different ages in the sample of 15,000 represents the distribution of the whole driver population, not only in that year but also in every other year that enters into the comparison. This assumption cannot be tested without certain information not now available, namely, an age census for each of the succeeding years. Mr. C. G. Hubbell, statistician of the Massachusetts Department of Motor Vehicles, states in a letter that similar censuses have not been made from year to year, and that he does not feel absolutely sure that the application of this break-down is perfectly proper.

TABLE 28.—*Comparison of actual with expected number of drivers of different ages involved in fatal accidents in Massachusetts, 1934*

Age	Number of drivers		Difference	Ratio, actual number to expected number	Age	Number of drivers		Difference	Ratio, actual number to expected number
	Actual	Expected ¹				Actual	Expected ¹		
Not over 20.....	113	85	28	1.33	51 to 55.....	28	57	-29	0.49
21 to 25.....	222	148	74	1.50	56 to 60.....	30	39	-9	.77
26 to 30.....	192	153	39	1.26	61 to 65.....	17	22	-5	.77
31 to 35.....	129	142	-13	.91	66 and over.....	18	22	-4	.82
36 to 40.....	80	124	-44	.65					
41 to 45.....	74	92	-18	.80	Total.....	961	961	0	1.00
46 to 50.....	58	77	-19	.75					

¹ Estimated from a report published several years ago by the Registry of Motor Vehicles showing the distribution by ages of 15,000 operators.

$$\chi^2=99.9$$

$$P=5.8(10)^{-17}$$

TABLE 29.—*Comparison of actual with expected number of drivers of different ages involved in fatal accidents in Massachusetts, 1935*

Age	Number of drivers		Difference	Ratio, actual number to expected number	Age	Number of drivers		Difference	Ratio, actual number to expected number
	Actual	Expected ¹				Actual	Expected ¹		
Not over 20.....	106	74	32	1.43	51 to 55.....	39	50	-11	0.78
21 to 25.....	184	129	55	1.43	56 to 60.....	31	34	-3	.91
26 to 30.....	133	134	-1	.99	61 to 65.....	16	20	-4	.80
31 to 35.....	145	124	21	1.17	66 and over.....	10	19	-9	.53
36 to 40.....	76	108	-32	.70					
41 to 45.....	54	81	-27	.67	Total.....	840	840	0	1.00
46 to 50.....	46	67	-21	.69					

¹ Estimated from a report published several years ago by the Registry of Motor Vehicles showing the distribution by ages of 15,000 operators.

$$\chi^2=73.66$$

$$P=8.7(10)^{-12}$$

TABLE 30.—*Comparison of actual with expected number of drivers of different ages involved in fatal accidents in Massachusetts, 1928, 1932, 1933*

Age	Number of drivers		Difference	Ratio, actual number to expected number	Age	Number of drivers		Difference	Ratio, actual number to expected number
	Actual	Expected ¹				Actual	Expected ¹		
Not over 20.....	348	217	131	1.60	51 to 55.....	84	145	-61	0.58
21 to 25.....	498	380	118	1.31	56 to 60.....	75	101	-26	.74
26 to 30.....	438	392	46	1.12	61 to 65.....	51	57	-6	.90
31 to 35.....	360	365	-5	.99	66 and over.....	30	57	-27	.53
36 to 40.....	267	318	-51	.84					
41 to 45.....	171	237	-66	.72	Total.....	2,466	2,466	0	1.00
46 to 50.....	144	197	-53	.73					

¹ Estimated from a report published several years ago by the Registry of Motor Vehicles showing the distribution by ages of 15,000 operators.

$$\chi^2=207.78$$

$$P=3.8(10)^{-39}$$

It has later appeared that there was good reason for his misgiving. The Commissioner of Motor Vehicles of Connecticut, aided by Works Progress Administration project 2295 and National Youth

Administration project 168-Y and assisted by part of the staff of the Highway Research Board, caused a census to be prepared of the licensed drivers of Connecticut for each of the years 1932 to 1936 inclusive. The unit age interval was made 1 year, so that no facts need be obscured by premature grouping. A similar census for 1929, prepared some years earlier, was also made available, along with the results of this one. Table 31 shows the percent of drivers in each age-group by 5-year intervals for each of these 6 years.

Certain important trends are quite evident. For example, the relative number of drivers in the age class 16 to 20 years decreased in every census over the next previous census, declining from 10.78 percent of the total in 1929 to 6.91 percent of the total in 1936—a relative decrease of about two-fifths. Likewise the age class 21 to 25 years declined in every census over the next preceding, from 16.98 percent of the total in 1929 to 14.73 percent of the total in 1936—a relative loss of about one-seventh. On the other hand, the age group 61 to 65 was relatively 45 percent larger in 1936 than in 1929, with respect to the populations of those respective years. The trends in the other age groups are perhaps less striking, but on the whole the average age of the driving population is definitely increasing.

TABLE 31.—*Age distribution of licensed drivers in Connecticut, 1929 and 1932-36*

[Percent of total number of licensed drivers in each age group for each year, based on data from the Commissioner of Motor Vehicles]

Age	Percent of total number of licensed drivers					
	1929	1932	1933	1934	1935	1936
16 to 20.....	10.78	7.98	7.77	7.45	7.00	6.91
21 to 25.....	16.98	15.50	15.46	15.26	15.02	14.73
26 to 30.....	15.80	15.81	15.87	15.80	15.87	15.42
31 to 35.....	14.88	14.85	14.82	14.44	14.10	14.30
36 to 40.....	12.89	13.59	13.56	13.04	12.72	13.23
41 to 45.....	9.94	10.68	10.79	11.07	11.01	11.34
46 to 50.....	7.22	8.01	7.96	8.19	8.75	8.78
51 to 55.....	5.10	5.58	5.60	5.76	6.36	6.16
56 to 60.....	3.29	3.89	3.99	4.20	4.20	4.17
61 to 65.....	1.79	2.33	2.38	2.56	2.67	2.60
66 and over.....	1.32	1.76	1.80	2.23	2.30	2.34

It may be asked at once whether these changes are statistically significant or not. The answer may be found in table 32 in which the age distribution of each of these annual populations is compared with that of every other. Each tabular entry shows the probability of drawing "at random" from an infinitely large, homogeneous, parent-population two samples which would differ from each other, in respect to distribution of ages, by at least as much as the sample populations of the 2 years in question.²³

²³ The method of calculation is prescribed by Karl Pearson: "On the Probability that two Independent Distributions of Frequency are really Samples from the same Population." *Biometrika*, 1911, 8: 250-254.

N = the number of individuals in the first sample
 N' = the number of individuals in the second sample
 j = any class-frequency in the first sample
 j' = the corresponding class-frequency in the second sample

then, the probability P of the two samples being homogeneous is derived from χ^2 in the usual manner, while

$$\chi^2 = NN' \cdot S [(j/N - j'/N')^2 / (j + j')]$$

the summation being taken over all the frequency-classes.

TABLE 32.—*Probability that Connecticut populations of licensed drivers in each pair of years were drawn from the same "parent-population"*

Year	1929	1932	1933	1934	1935	1936
1929.....		2(10)–647	2(10)–845	5(10)–1155	5(10)–1004	2(10)–1724
1932.....			4(10)–3	3(10)–108	5(10)–24	2(10)–231
1933.....				5(10)–75	4(10)–234	7(10)–231
1934.....					7(10)–65	3(10)–67
1935.....						5(10)–25
1936.....						

According to this criterion, one could obtain by chance, about once in 250 years, two sample populations as unlike as the Connecticut populations of 1932 and 1933; but in none of the other instances can one imagine a number so large as to afford one such chance, although one can indeed conceive it. This table shows that if an age census is to be of value, it should be taken for the same year as that for which the comparison is to be made; otherwise, some distortion of fact is likely to result from using it, and in some comparisons the distortion might be misleading. We shall presently see that for some purposes an annual age census may be very useful indeed.

The broken down age distributions of the fatal-accident drivers of Connecticut for the year 1929 were not available. In the years 1932–36 inclusive, 2,467 identified drivers were involved in fatal accidents in Connecticut. We ask first of all whether the rate of involvement in fatal accidents shows a trend from year to year, such that a narrow critical age range can be made out. Since the total number of involved drivers is rather small, the data for all 5 years (1932–36) have been grouped and the results for each single year of age (up to age 65), are shown in table 33. The data are rather meager for ages 16 to 18; nevertheless, it looks as if the trend is definite, the rates for the ages 19 to 21 being higher than for any other ages. The rate declines rapidly from age 21 to age 28 to 30, in which neighborhood it reaches the average for this population.

TABLE 33.—*Age distribution of Connecticut drivers involved in fatal accidents, 1932–36*

[Summary of five official annual censuses made by Department of Motor Vehicles]

Age	Number of registered drivers	No. of identified drivers involved in fatal accidents	Involved identified drivers per 1,000 registered drivers	Ratio, actual rate to average rate
16 years.....	9,474	19	2.006	1.76
17 years.....	17,166	32	1.864	1.64
18 years.....	35,070	52	1.483	1.30
19 years.....	46,526	101	2.171	1.91
20 years.....	51,978	112	2.155	1.89
21 years.....	60,555	130	2.147	1.88
22 years.....	64,623	128	1.981	1.74
23 years.....	65,488	106	1.619	1.42
24 years.....	68,730	96	1.397	1.23
25 years.....	69,235	94	1.358	1.19
26 years.....	69,632	102	1.465	1.29
27 years.....	69,151	99	1.432	1.26
28 years.....	68,777	81	1.188	1.04
29 years.....	67,777	78	1.151	1.01
30 years.....	65,598	69	1.052	.92
31 years.....	64,883	68	1.048	.92
32 years.....	65,597	74	1.128	.99
33 years.....	62,396	60	.962	.84

TABLE 33.—*Age distribution of Connecticut drivers involved in fatal accidents, 1932-36—Continued*

Age	Number of registered drivers	No. of identified drivers involved in fatal accidents	Involved identified drivers per 1,000 registered drivers	Ratio, actual rate to average rate
34 years.....	60,460	61	1.009	0.89
35 years.....	60,446	65	1.075	.94
36 years.....	59,876	49	.818	.72
37 years.....	58,256	58	.996	.87
38 years.....	57,372	49	.854	.75
39 years.....	55,473	67	1.208	1.06
40 years.....	55,286	59	1.067	.94
41 years.....	52,132	37	.710	.62
42 years.....	49,888	44	.882	.77
43 years.....	48,307	31	.642	.56
44 years.....	45,507	48	1.055	.93
45 years.....	42,197	36	.853	.75
46 years.....	41,032	23	.561	.49
47 years.....	38,930	28	.719	.63
48 years.....	36,039	27	.749	.66
49 years.....	33,214	18	.542	.48
50 years.....	31,720	24	.757	.66
51 years.....	29,417	21	.714	.63
52 years.....	28,216	24	.851	.75
53 years.....	25,287	15	.593	.52
54 years.....	22,684	18	.794	.70
55 years.....	22,250	11	.494	.43
56 years.....	21,135	13	.615	.54
57 years.....	19,087	12	.629	.55
58 years.....	17,148	15	.875	.77
59 years.....	16,264	13	.799	.70
60 years.....	15,024	15	.998	.88
61 years.....	13,321	12	.901	.79
62 years.....	12,206	11	.901	.79
63 years.....	11,064	6	.542	.48
64 years.....	9,265	12	1.295	1.14
65 years.....	8,577	10	1.166	1.02
66 to 70 years.....	28,688	20	.698	.61
71 years and over.....	16,817	14	.832	.73
All ages.....	2,165,241	2,467	1.139	1.00

It has been suggested that the abnormally high rate for operators between 19 and 21 years old may be due in part to unusually high exposure. However, we know very little about that, and we lack the means of finding out very much more. The records of the Commissioner's office do not distinguish between drivers of commercial vehicles not in public service and others. It is widely believed that a large proportion of drivers of light delivery trucks, taxicabs, etc., are under age or at best in their early twenties; but it is not easy to test that belief, nor yet from the Connecticut records to determine the share of these classes of vehicles in fatal accidents. Taxicabs, of course, are easily accounted for: One taxicab was involved in a fatal accident in 1935 and another in 1936; their contribution to the 5-year total is not heavy. Commercial vehicles of all kinds are about one-seventh to one-eighth of the registered vehicles, and make up about one-sixth of the vehicles involved in fatal accidents. But from the records we cannot tell how many are heavy and how many are light; or which ones were driven by youths and which ones by mature drivers. On the whole, the suggestion seems to have a doubtful basis.

It may be well, for the present, to postpone consideration of other hypotheses, while we review a few more facts.

One may well ask whether the trend shown in table 33 is a genuine trend, since the number of involved drivers in the various age-groups

is at best rather small. To test this question, we have thought it well to group the data in 5-year classes, as shown in table 34. The second column of the table shows the number of involved drivers in each age-class, derived by actual count. The third column shows the number which we should expect to be involved if we assume that liability to involvement is independent of age.

To make it clear how this expectation was arrived at: The 5 annual populations included a total of 2,165,241 drivers; of these, 2,467 were involved in fatal accidents. The rate is, therefore, 2,467 divided by 2,165,241, or 1.139 involved drivers per 1,000 registered drivers. If we then multiply the number of thousands of registered drivers in each age-class by this rate, we get the expected number of involved drivers, according to this hypothesis.

By the chi-squared criterion, the probability of obtaining by chance a discrepancy between two age-distributions that is at least as large as this discrepancy is of the order of $(10)^{-58}$, which amounts to practical certainty that the hypothesis is false.

TABLE 34.—*Comparison of actual with expected number of drivers of different ages involved in fatal accidents in Connecticut, 1932-36*

Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number	Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number
Not over 20.....	316	183	133	1.72	51 to 55.....	89	146	-57	0.61
21 to 25.....	554	374	180	1.48	56 to 60.....	68	101	-33	.67
26 to 30.....	429	388	41	1.11	61 to 65.....	51	62	-11	.82
31 to 35.....	328	358	-30	.92	66 and over.....	34	52	-18	.65
36 to 40.....	282	326	-44	.87					
41 to 45.....	196	271	-75	.72	Total.....	2,467	2,467	0	-----
46 to 50.....	120	206	-86	.58					

¹ Based on age census by Connecticut Department of Motor Vehicles taken year by year.

$$\chi^2=294$$

$$P=4(10)^{-58}$$

Tables 35-39 show the results of a similar comparison for each of the 5 years taken separately. The best agreement between the actual count and the count that one should expect, if age had nothing to do with involvement in fatal accidents, is to be found in the census of 1934. But even here, one finds a probability of only 1 in 500 that the misfit could have occurred by chance; in the population of 1933, this probability is only 1 in 200,000; in all the other instances it is utterly negligible, and in some of them it is too small to be imagined.

Perhaps the most striking feature in tables 35-39 is the consistently high rate of fatal-accident involvement for the two age groups 16-20 and 21-25. In every year of the experience, as well as in the summary for the 5 years (shown in table 34), these two classes have shown up very badly, as they also do in the less reliable comparisons from Massachusetts (tables 27-30).

TABLE 35.—Comparison of actual with expected number of drivers of different ages involved in fatal accidents in Connecticut, 1932

Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number	Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number
Not over 20.....	68	36	32	1.89	51 to 55.....	17	25	-8	0.68
21 to 25.....	104	71	33	1.47	56 to 60.....	13	18	-5	.72
26 to 30.....	79	72	7	1.10	61 to 65.....	9	11	-2	.82
31 to 35.....	56	68	-12	.82	66 and over.....	7	7	0	1.00
36 to 40.....	52	62	-10	.84					
41 to 45.....	35	49	-14	.71	Total.....	455	455	0	-----
46 to 50.....	15	36	-21	.42					

¹ Based on age census by Connecticut Department of Motor Vehicles.

$$\chi^2=68.75$$

$$P=7.7(10)^{-11}$$

TABLE 36.—Comparison of actual with expected number of drivers of different ages involved in fatal accidents in Connecticut, 1933

Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number	Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number
Not over 20.....	64	41	23	1.56	51 to 55.....	13	30	-17	0.43
21 to 25.....	106	82	24	1.29	56 to 60.....	14	21	-7	.67
26 to 30.....	93	85	8	1.09	61 to 65.....	14	13	1	1.07
31 to 35.....	84	80	4	1.05	66 and over.....	5	10	-5	.50
36 to 40.....	64	72	-8	.89					
41 to 45.....	49	57	-8	.86	Total.....	533	533	0	-----
46 to 50.....	27	42	-15	.64					

¹ Based on age census by Connecticut Department of Motor Vehicles.

$$\chi^2=43$$

$$P=5(10)^{-6}$$

TABLE 37.—Comparison of actual with expected number of drivers of different ages involved in fatal accidents in Connecticut, 1934

Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number	Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number
Not over 20.....	47	38	9	1.24	51 to 55.....	22	29	-7	0.76
21 to 25.....	111	78	33	1.42	56 to 60.....	19	21	-2	.90
26 to 30.....	84	80	4	1.05	61 to 65.....	13	13	0	1.00
31 to 35.....	71	73	-2	.97	66 and over.....	8	11	-3	.73
36 to 40.....	61	66	-5	.92					
41 to 45.....	45	56	-11	.80	Total.....	507	507	0	-----
46 to 50.....	26	42	-16	.62					

¹ Based on age census by Connecticut Department of Motor Vehicles.

$$\chi^2=27.68$$

$$P=2(10)^{-3}$$

TABLE 38.—*Comparison of actual with expected number of drivers of different ages involved in fatal accidents in Connecticut, 1935*

Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number	Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number
Not over 20.....	72	37	35	1.94	51 to 55.....	24	33	-9	0.73
21 to 25.....	129	78	51	1.65	56 to 60.....	12	22	-10	.55
26 to 30.....	92	83	9	1.11	61 to 65.....	8	14	-6	.57
31 to 35.....	57	74	-17	.77	66 and over.....	9	12	-3	.75
36 to 40.....	57	66	-9	.86					
41 to 45.....	39	57	-18	.68	Total.....	522	522	0	-----
46 to 50.....	23	46	-23	.50					

¹ Based on age census by Connecticut Department of Motor Vehicles.

$$\chi^2=100.1$$

$$P=5(10)^{-17}$$

TABLE 39.—*Comparison of actual with expected number of drivers of different ages involved in fatal accidents in Connecticut, 1936*

Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number	Age	Actual number of drivers	Expected number of drivers ¹	Difference	Ratio, actual number to expected number
Not over 20.....	65	31	34	2.10	51 to 55.....	13	28	-15	0.46
21 to 25.....	104	66	38	1.58	56 to 60.....	10	19	-9	.53
26 to 30.....	81	69	12	1.17	61 to 65.....	7	12	-5	.58
31 to 35.....	60	64	-4	.94	66 and over.....	5	11	-6	.45
36 to 40.....	48	60	-12	.80					
41 to 45.....	28	51	-23	.55	Total.....	450	450	0	-----
46 to 50.....	29	39	-10	.74					

¹ Based on age census by Connecticut Department of Motor Vehicles.

$$\chi^2=94$$

$$P=8(10)^{-16}$$

Let us consider especially the age group 16 to 20 years, for the year 1936. In that year Connecticut registered 32,940 drivers of these ages; they made up 6.91 percent of its population of registered drivers. But 65 of them were identified as being in fatal accidents; they constituted 14.44 percent (instead of 6.91 percent) of all the identified drivers who were so involved in that year. The deaths in Connecticut accidents in that year were only 439, which is about 97.6 percent of the 450 identified drivers who were involved. These 65 youthful drivers, therefore, probably caused 63 deaths—about one-seventh of the total. If this holds for the country at large, the drivers under voting age killed about 5,400 persons in the United States in 1936. This many lives would have been saved if in that year no one had been allowed to drive who had not attained the age of 21 years and if those drivers, who were 21 and over, had driven no more or no worse than they actually drove.

It is of course futile to expect laws to be passed and enforced which would effectively raise the minimum driving age to 21. Nor is even this rather startling exhibit proof in itself that we ought to take this measure, in the expectation of its being a remedy.

Let us now see what would happen if, by any means whatsoever, we could reduce the fatal-accident rate of the youthful drivers to that

of the remainder of the population. Table 40 shows for the year 1936 certain age groups for Connecticut drivers and their corresponding fatal accidents. If the 32,940 16-to-20-year-old drivers had been involved at the rate of the rest of the population, namely, 0.868 per 1,000, instead of their own rate of 1.973, only 29 would have been involved, instead of 65. The net saving would have been 36 involved drivers, and if these relationships hold on a Nation-wide scale, they indicate that about 3,085 persons were killed on our highways in 1936 who would have been spared if the drivers less than 21 years old had not driven more destructively than their elders.

We have shown that of those Connecticut drivers who were involved in fatal accidents during 1932-36, far too many were less than 21 years old or even less than 25 years old, to permit us to suppose that involvement is independent of age; and with respect to the drivers under 21, we have questioned the supposition that they encounter the largest number of fatal-accident opportunities per capita per annum, unless they create a large proportion of those opportunities themselves by driving improperly. In every year of this period this class, and also the 21-25-year class, had an abnormally high rate. In table 41 we have summarized the results shown in the last columns of tables 35-39 to show that in 1935 and also in 1936 these classes of drivers had a still larger share of the total number of fatal accidents than in 1932, 1933, or 1934. On the other hand, the age groups 56 to 60 and 61 to 65 had a correspondingly smaller share.

TABLE 40.—*Identified fatal-accident drivers per 1,000 registered drivers for certain age groups in Connecticut, 1936*

Age	Registered drivers	Identified drivers involved in fatal accidents	
		Number	Per 1,000 registered drivers
16 to 20 years.....	32,940	65	1.973
21 years and over.....	443,509	385	.868
All ages.....	476,449	450	.944

TABLE 41.—*Ratio of actual number to expected number of fatal accidents among identified drivers according to age, in Connecticut, by years*

Age	1932	1933	1934	1935	1936	1932-36
Not over 20 years.....	1.89	1.56	1.24	1.94	2.10	1.72
21 to 25 years.....	1.47	1.29	1.42	1.65	1.58	1.48
26 to 30 years.....	1.10	1.09	1.05	1.11	1.17	1.11
31 to 35 years.....	.82	1.05	.97	.77	.94	.92
36 to 40 years.....	.84	.89	.92	.86	.80	.87
41 to 45 years.....	.71	.86	.80	.68	.55	.72
46 to 50 years.....	.42	.64	.62	.50	.74	.58
51 to 55 years.....	.68	.43	.76	.73	.46	.61
56 to 60 years.....	.72	.67	.90	.55	.53	.67
61 to 65 years.....	.82	1.07	1.00	.57	.58	.82
66 years and over.....	1.00	.50	.73	.75	.45	.65

This annual trend, for each of these age groups, seems to be definite and has invited some speculation, into which we need not go at present. If we turn, however, to table 42, we find some facts which will modify our interpretation. The material fully covers an experience of only

5 years, and as every competent statistician knows, the characteristics of a trend cannot be definitely established in a short time. However, this information seems to be all that exists.

So far as we have been able to ascertain, Connecticut is the only State which has compiled and preserved a 5-year age census of licensed drivers, along with an age census for each of those years of drivers involved in a given class of accidents, without grouping the data into age classes which were so large as to obscure these important facts. Also, the accident records of that State for the years preceding 1932 have now been destroyed, in accordance with a permissive statute. Table 42 shows the rate per 1,000 registered drivers of those identified drivers who were involved in fatal accidents, according to age groups, for the years 1932-36 separately. (In any year the deaths are proportional, though not exactly equal, to the number of drivers involved; also, the proportionality varies slightly from year to year.)

TABLE 42.—*Identified drivers involved in fatal accidents per 1,000 registered drivers, Connecticut, 1932-36*

Age	1932	1933	1934	1935	1936
Not over 20.....	2.089	2.001	1.485	2.316	1.973
21 to 25.....	1.645	1.665	1.713	1.932	1.481
26 to 30.....	1.226	1.423	1.252	1.305	1.102
31 to 35.....	.925	1.376	1.157	.910	.880
36 to 40.....	.938	1.146	1.101	1.008	.761
41 to 45.....	.804	1.102	.957	.797	.518
46 to 50.....	.459	.824	.748	.691	.693
51 to 55.....	.747	.564	.900	.850	.443
56 to 60.....	.819	.852	1.065	.643	.504
61 to 65.....	.949	1.426	1.193	.675	.566
66 and over.....	.975	.673	.842	.879	.448
All ages.....	1.116	1.294	1.193	1.175	.944

The first line of table 42 shows that the rate of fatal-accident involvement of drivers between 16 and 20 years of age dropped from 2.089 per 1,000 in 1932 to 1.485 in 1934, rising to 2.316 in 1935 and dropping to 1.973 in 1936. Does this indicate a trend? The "best fitting" linear equation, by least squares, is $R = 1.956 + 0.0083(x)$, in which R denotes the involved drivers per 1,000 registered drivers, and x the time in years measured from 1932. The increment in the 4-year interval would amount to less than one involved driver among the 30,000 or more registered drivers in this age class. Therefore, it seems better not to assume an annual trend in this class.

In the age group 21-25 the "trend" is more gradual, being at the rate of -0.0061 per annum, and of course is in the nature of a decrease. But again, this decrement in the 4-year interval would amount to less than 1 involved driver among the 60,000 or more in this age class; hence, we can hardly speak of an annual trend in this age class.

For the whole driver population, however, there is an annual decrement of 0.043 in the annual rate, which amounts to about 3.6 percent, and it has continued not only through this period but also back to 1929.

We may now see why the youthful drivers are having an increasing share in the annual total of fatal accidents in Connecticut. The population as a whole has been improving; the youthful driver has not improved, nor has he noticeably become worse. This means that his elders have improved still more than the annual trend for the whole population indicates.

Now turn to the age-group comparisons of 7,082 drivers who were involved in the several kinds of accidents included in the 6-year survey of the present investigators. The results are presented in tables 43, 44, and 45. The form of these tables being similar to that of tables 27-30 inclusive, no detailed explanation is necessary. The fatal-accident picture is essentially the same as in the complete census taken by the Department of Motor Vehicles for the years 1932-36, if one makes allowance for the small numbers of drivers involved in each class, and for the fact that drivers are classed according to the years in which they were born so that their ages changed by 6 years during the experience.

From tables 43 and 44 it appears that the standing of the two youngest classes of drivers in respect to fatal accidents and in respect to nonfatal accidents which involve personal injury does not differ greatly. Table 45 shows that these classes are still in bad standing with respect to nonpersonal accidents which involve property damage. A break-down of the nonpersonal property damage accidents according to the total damage involved in each did not show that the younger drivers definitely caused a disproportionate amount of property damage per accident.

TABLE 43.—*Fatal accidents in relation to years of birth of general drivers in Connecticut, 1931-36*

[Actual and expected distribution of fatal accidents reported to the Commissioner of Motor Vehicles, in a licensed-driver sample selected at random]

Year of birth	Number of drivers		Difference	Ratio, actual number to expected number	Year of birth	Number of drivers		Difference	Ratio, actual number to expected number
	Actual	Expected				Actual	Expected		
1911 and later...	22	12	10	1.83	1876-80.....	6	7	-1	0.56
1906-10.....	30	20	10	1.50	1871-75.....	3	5	-2	.60
1901-05.....	24	20	4	1.20	1866-70.....	0	3	-3	.00
1896-1900.....	20	20	0	1.00	1861 and earlier..	3	2	1	1.50
1891-95.....	10	18	-8	.56	Total.....	133	133	0	-----
1886-90.....	9	15	-6	.60					
1881-85.....	6	11	-5	.55					

$$\chi^2=24.1$$

$$P=4(10)^{-3}$$

TABLE 44.—*Personal injury accidents in relation to years of birth of general drivers in Connecticut, 1931-36*

[Actual and expected distribution of personal-injury accidents reported to the Commissioner of Motor Vehicles in a licensed-driver sample selected at random from reports made to the Commissioner of Motor Vehicles]

Year of birth	Number of drivers		Difference	Ratio, actual number to expected number	Year of birth	Number of drivers		Difference	Ratio, actual number to expected number
	Actual	Expected				Actual	Expected		
1911 and later...	434	284	150	1.53	1876-80.....	130	178	-48	0.73
1906-10.....	571	476	95	1.20	1871-75.....	93	123	-30	.76
1901-05.....	533	499	34	1.07	1866-70.....	65	71	-6	.92
1896-1900.....	448	491	-43	.91	1861-65.....	39	39	0	1.00
1891-95.....	377	449	-72	.84	Total.....	3,233	3,233	0	-----
1886-90.....	321	368	-47	.87					
1881-85.....	222	255	-33	.87					

$$\chi^2=146.9$$

$$P=2.4(10)^{-27}$$

TABLE 45.—*Property damage accidents in relation to years of birth of general drivers in Connecticut, 1931-36*

[Actual and expected distribution of accidents involving property damage exceeding \$25, but no fatality or personal injury, reported to the Commissioner of Motor Vehicles, in a licensed-driver sample selected at random]

Year of birth	Number of drivers		Differ- ence	Ratio, actual number to ex- pected number	Year of birth	Number of drivers		Differ- ence	Ratio, actual number to ex- pected number
	Actual	Expect- ed				Actual	Expect- ed		
1911 and later.....	481	327	154	1.47	1876-80.....	174	204	-30	0.85
1906-10.....	664	547	117	1.21	1871-75.....	112	141	-29	.79
1901-05.....	566	573	-7	.99	1866-70.....	74	82	-8	.90
1896-1900.....	552	565	-13	.98	Before 1865.....	49	45	4	1.09
1891-95.....	440	516	-76	.85					
1886-90.....	369	423	-54	.87					
1881-85.....	235	293	-58	.80	Total.....	3,716	3,716	0	-----

$$\chi^2 = 139.1$$

$$P = 7(10)^{-24}$$

In connection with the Connecticut census, study was made of certain published data ²⁴ from the District of Columbia, along with some unpublished data loaned by the Director of Vehicles and Traffic, Mr. William A. Van Duzer. In the calendar year 1934 there were reported by or to the police department 11,424 traffic accidents, in 10,995 of which the ages of the drivers were reported. The reports are in some degree uncertain, owing to the fact that the driver's license card does not give the date of his birth, but his age when the license was issued. The license holds good for 3 years. If the police officer reports the accident, he is apt to note the age printed on the card instead of adding to that age the years between the date of the license and the date of the accident. If the card showed the date of the operator's birth instead of his age on the date of the license, this temptation to carelessness would be reduced. However, since the drivers' ages have been grouped in 5-year intervals, the uncertainty from this source is probably not very large. According to this census, the results of which appear in table 46, the drivers between 16 and 20 years of age had 131 more accidents than the hypothesis of equal liability permits. The drivers between 21 and 25 years of age collectively had 297 more accidents than this hypothesis permits. There is also a reversal of the trend, such as will appear in no other table except table 24, for the age group 31-35, where the actual number of accidents per driver per annum is 1.13 times the expected number. The disparity for the age group 41-45 is quite favorable, being about as striking as the unfavorable disparity for the drivers 21-25 years old. The probability of the discrepancy between the expected number and the actual number in the several age groups being due to chance is of the order of 10^{-43} .

²⁴ Traffic Survey: Hearings before the Subcommittee on Streets and Traffic of the Committee on the District of Columbia, House of Representatives, 74th Cong., 2d sess. Washington. U. S. Government Printing Office, 1936.

TABLE 46.—*Comparison of actual with expected number of general traffic accidents accruing to drivers of different ages in the District of Columbia, 1934*

Age	Number of drivers		Difference	Ratio, actual number to expected number	Age	Number of drivers		Difference	Ratio, actual number to expected number
	Actual	Expected				Actual	Expected		
16 to 20.....	967	836	131	1.16	51 to 55.....	363	462	-99	0.79
21 to 25.....	2,364	2,067	297	1.14	56 to 60.....	209	275	-66	.76
26 to 30.....	2,298	2,309	-11	1.00	61 to 65.....	99	154	-55	.64
31 to 35.....	1,880	1,671	209	1.13	66 and over.....	55	110	-55	.50
36 to 40.....	1,319	1,363	-44	.97					
41 to 45.....	836	1,044	-208	.80	Total.....	10,995	10,995	0	-----
46 to 50.....	605	704	-99	.86					

$$\chi^2=230.4$$

$$P=7.2(10)^{-44}$$

In table 47 appears the result of a similar census for the period July 1, 1935, to June 30, 1936. This distribution shows a more consistent trend than the one in table 46. The last column of the table shows that the drivers in the two lowest age groups have an unduly large proportion of the general accidents. The disparity amongst them is smaller than in the Massachusetts census of fatal accidents. According to the chi-squared criterion, the probability of the discrepancy between expectation and actuality is of the order of $(10)^{-181}$.

This table suggests that in the driver population of 1935-36 the younger members may have behaved differently or encountered more hazards each than would the older drivers. Without knowing how many miles a year each driver traveled or how many hazards he encountered per mile, it is impossible to evaluate the latter hypothesis. Some light, however, may be thrown on the questions of possibility from an exhibit in table 48. This table covers an experience in the District of Columbia between January and May of 1936. During this period the Department of Vehicles and Traffic impartially suspended the licenses of all drivers who were convicted of speeding within the District. According to this table, the suspensions for speeding amongst the drivers between the ages 16 and 25 are about 2.3 times as frequent as one should expect from knowledge of the number of licensed drivers in the several age-groups and on the hypothesis of equal liability. Throughout the range of ages grouped in 5-year classes, the rate of suspensions for speeding is maximum in the youngest-age group and declines progressively to age 60, no drivers past 60 being thus disciplined. The probability of this discrepancy being due to chance is of the order of $(10)^{-135}$.

TABLE 47.—*Comparison of actual with expected number of general traffic accidents accruing to drivers of different ages in the District of Columbia, July 1, 1935, to June 30, 1936*

Age	Number of drivers		Difference	Ratio, actual number to expected number	Age	Number of drivers		Difference	Ratio, actual number to expected number
	Actual	Expected				Actual	Expected		
16 to 20.....	1,165	935	230	1.25	51 to 55.....	536	874	-338	0.61
21 to 25.....	2,958	2,207	751	1.34	56 to 60.....	307	506	-199	.61
26 to 30.....	3,295	2,535	460	1.16	61 to 65.....	153	215	-62	.71
31 to 35.....	2,575	2,422	153	1.06	66 and over.....	92	184	-92	.50
36 to 40.....	2,039	2,161	-122	.94					
41 to 45.....	1,333	1,716	-383	.78	Total.....	15,327	15,327	0	-----
46 to 50.....	874	1,272	-398	.69					

$$\chi^2=886.2$$

$$P=6.5(10)^{-182}$$

TABLE 48.—Comparison of actual with expected number of suspensions for speeding of drivers of different ages in the District of Columbia, January–May 1936

Age	Number of suspensions		Difference	Ratio, actual number to expected number	Age	Number of suspensions		Difference	Ratio, actual number to expected number
	Actual	Expected				Actual	Expected		
16 to 20-----	160	69	91	2.32	51 to 55-----	11	65	-54	0.17
21 to 25-----	373	163	210	2.29	56 to 60-----	4	38	-34	.11
26 to 30-----	286	210	76	1.36	61 to 65-----	0	16	-16	0
31 to 35-----	132	179	-47	.74	66 and over-----	0	14	-14	0
36 to 40-----	97	160	-63	.61					
41 to 45-----	42	127	-85	.33	Total-----	1, 135	1, 135	0	-----
46 to 50-----	30	94	-64	.32					

$$\chi^2=661$$

$$P=1.5(10)^{-135}$$

Having ruled out chance, some hypotheses may be entertained. One hypothesis is that the youngster disregards speed regulations more often than his elders. The results of the census agree with this hypothesis.

Another hypothesis is that the arresting officers on the one hand, and the courts on the other, might be less reluctant to arrest or convict a middle-aged driver for speeding than to convict a youngster. They might feel that the youngster needed to learn a lesson, that he was not too old to learn, and that it was unnecessary that he handle the car, anyway. On the other hand, they might consider that the older driver would not profit by discipline enough to justify the inconvenience of the double penalty of fine and suspension. They might also have less fear of the political consequences of arresting or sentencing a youth than of the consequences of offending a citizen of standing. The results of the census agree with this hypothesis.

The Director of Vehicles and Traffic, however, is personally convinced that other facts would contradict the latter hypothesis. His feeling of assurance rests on his acquaintance with the magistrates and the procedure in the traffic courts in the District.

In the hearings before the Subcommittee on Streets and Traffic of the Committee on the District of Columbia, House of Representatives, Seventy-Fourth Congress, second session, Director Van Duzer expressed the opinion that one of the critical ages is age 18. In the District of Columbia a younger driver is allowed to operate a car belonging to his own immediate family but no other car. After he has attained the age of 18, he is allowed to drive any car that he may legally get. This hypothesis agrees with the census taken year by year, although the numbers in the different age groups then becomes rather small, making the comparisons uncertain. It also agrees with the results of a different fractionation of the data. If those drivers under 18 are grouped together and the drivers between 18 and 22 are put into one class, it is found for the year 1934 that the drivers under 18 had only 0.67 times as many accidents as the laws of chance permit, while the drivers between the ages of 18 and 22 had 1.28 times as many as should be expected. Thus, the discrepancy for the two younger age groups between tables 46 and 47 appears to be almost wholly accounted for by the drivers 18 to 22 years old, the discrepancy favorable to the driver 18 having little effect on the whole because of the fewness of those individuals.

The data on general accidents for the year 1935-36 shown in table 47 were then regrouped, and it was found that the drivers 16 to 17 years old have 1.33 times as many accidents as chance permits, while those 18 to 22 years of age have 1.31 times the expectant number. Thus the populations of 16 to 17 years old of those two periods did not behave uniformly. If the suspensions for speeding shown in table 48 are considered, we find the director's hypothesis is satisfied. The drivers 16 to 17 years of age were thus disciplined about 1.56 times as often as chance requires, those between 18 and 22 years of age 2.69 times as often, those between 23 and 27 about 1.73 times as often as chance allows. There is, therefore, a definite increase in the incidence rate of suspensions for this purpose beginning at age 18.



